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PEANUTS AND PEANUT PRODUCTS

U. S. DEPARTMENT OF AGRICULTURE

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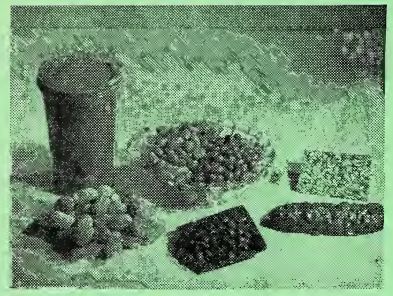

The leading use for peanuts is in making peanut butter. Perhaps salted peanuts come next, and then peanut candy.

During the early days of the industry most peanuts were sold for roasting in the shell. Now less than 10 percent of the commercial crop reaches the public in that form.

In some recent years, hundreds of millions of pounds of peanuts have been crushed for oil, reaching the public in the form of vegetable shortening, vegetable cooking fats, oleomargarine, and salad oil. Peanut meal, the residue from crushing peanuts for oil, is sold chiefly to manufacturers of stock feeds. Most peanut hulls are used as fuel in the shelling and crushing mills.

More than 1 billion pounds of peanuts have been picked and threshed in the United States yearly for the last 7 years. In addition, the peanuts from over a million acres have been harvested by hogging-off. Sixty years ago the total crop of the country was less than 40 million pounds.

The first 30 years of the present century saw substantial and at times heavy imports of peanuts, principally from China, Japan, and Spain. Chiefly because of increased tariff rates, imports have been relatively light during the past 10 years, with the Philippine Islands the chief present source.

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MARKETING PEANUTS AND PEANUT PRODUCTS [1]

By Harold J. Clay, *associate marketing specialist, Agricultural Marketing Service*

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The peanut, for over 20 years a leading money crop in the Southern States, reaches the consumer in many widely different forms. Once grown exclusively for sale roasted in the shell and for feeding to hogs, peanuts are now more widely known in the salted form, and even larger quantities are marketed each year as peanut butter and peanut candy. In some years a considerable volume of peanuts has been crushed and the crude oil shipped to manufacturers of oleomargarine, compounds and vegetable shortenings, and salad oil. The course taken by the peanut in its journey from the farm to the consumer, then, is necessarily a varied one, with many bypaths.

[1] This publication is based on Department Bulletin 1401, Marketing Peanuts, by Harold J. Clay and Paul M. Williams, Marketing Specialists, issued in 1926. Acknowledgment is made to many members of the peanut industry and of the Department of Agriculture for helpful information and to Mrs. Leona Norgren and Miss A. C. Hurley for the tabulation of many of the figures used in the charts and tables shown in this publication.

HISTORICAL SKETCH

Like the potato and the tomato, and indeed most of our cultivated species, the peanut of commerce has not been found in the wild state. Probably through selection and cultivation the plant has had its characteristics changed sufficiently so that it is barely recognizable in its wild form. It was long thought to be a native of Brazil only (*10, pp. 411–415*),[2] but in 1936, William A. Archer, a plant explorer of the United States Department of Agriculture engaged in a search for wild types of peanuts, found wild forms growing extensively in the southern part of Paraguay, throughout Uruguay, and in the northeastern part of Argentina, as well as in the States of Matto Grosso and Rio Grande do Sul in the extreme southern part of Brazil. Dr. Archer found several strains closely related to our cultivated peanuts grown by the Indians in southern Brazil and Paraguay. There are about 15 species of wild peanuts aside from our cultivated species, *Arachis hypogæa.* From South America the peanut was carried by early slave ships to Africa, whence it was brought to this country along with the slaves in colonial days.

Few crops have experienced such a rapid growth in acreage and production as did the peanut earlier in the present century, but it has been widely known in this country for only 75 years. The Civil War gave the first important impulse to the development of the large-podded peanut. Before then its cultivation was limited to a small portion of eastern Virginia (*39, vol. VI, p. 514*). During the war almost every army in the field occupied, at some time or other, that portion of Virginia in which peanuts were grown. When the armies disbanded, the soldiers carried a knowledge and an appreciation of peanuts to all parts of the country. Between 1865 and 1870, the production of peanuts increased annually from 200 to 300 percent (*39, vol. VI, p. 514*). By 1868, 300,000 bushels were produced in Virginia (*37, p. 220*), and 11 years later, in 1879, commercial estimates placed the yield for the country at 1,725,000 bushels (*38, p. 143*).

It is thought that only the large-podded and medium-podded peanuts were brought to this country by the early slaves. The Virginia type and the African, or Wilmington, probably came from different sections of Africa. The Spanish peanut is said to have been introduced into Virginia from Malaga, Spain (whence its name) in 1871.[3]

Hand work in cleaning and preparing the peanuts for market proved impractical on a large scale, and until improved machinery for picking, cleaning, and shelling peanuts was invented, peanut growing as a business was necessarily of restricted importance.

The commercial development of the peanut industry may be said to have begun with the erection of modern cleaning plants.

A factory for cleaning peanuts was installed in 1876 in New York City, the leading market for peanuts at that time. It was soon found that eastern Virginia was the most logical place for a peanut plant to be located, and one that had a capacity of 1,800 bushels of peanuts a day was established in Norfolk in the same year.[4] A second factory was established in Norfolk in 1878, and a much larger one in Smithfield, Va., in 1880 (*18*).

[2] Italic numbers in parentheses refer to Literature Cited, pp. 120 to 122.
[3] As noted in Norfolk (Va.) Journal of Commerce. Nov. 5, 1898.
[4] From the unpublished notebook and diary of Thomas Rowland, Norfolk, Va.

Other plants followed, not only in Virginia and North Carolina but in other States, until by 1890 plants were operating even in Cincinnati, Nashville, and St. Louis. Before 1905 the large-podded peanut area was well equipped with factories that had improved machinery for cleaning and shelling peanuts. During the 1939–40 season some 32 plants were in operation in Virginia and North Carolina for cleaning and shelling peanuts, and 2 in Tennessee, which is also considered as being in the Virginia-North Carolina area.

The most rapid growth in peanut production, however, came in the Cotton Belt, notably in Alabama, Georgia, Florida, and Texas. The swift advance of the boll weevil from Texas eastward, with its ruinous effect on the cotton yield in many large areas, caused the farmers to turn to other crops. The peanut promised a market either directly at shelling or crushing mills, or indirectly at pork-packing plants, and a supply of a fine quality hay. A wave of peanut growing, therefore, swept over the Southern States and the acreage of Spanish increased rapidly, with Runners becoming important in Alabama and adjoining States.

Men familiar with shelling and cleaning operations in Virginia plants erected the first modern peanut plant in the Southwest at Terrell, Tex., in 1907, though the year previously a crude plant had been erected at Paris, Tex. Numerous other plants were rapidly established in the Texas area for shelling or crushing peanuts. In 1910 a peanut factory was established at Shreveport, La. Carlots of peanuts were crushed at Charleston, S. C., in 1914, following experimental crushing in 1912, and by 1917 peanuts were shelled or crushed at Edison, Fitzgerald, Fort Gaines, Quitman, and Bainbridge, Ga., Enterprise and Brundidge, Ala., and perhaps at other Southeastern points. Scores of new companies for shelling or crushing peanuts sprang up, and many of the older cottonseed-oil mills added the equipment necessary for shelling or crushing peanuts. The citizens of Enterprise, Ala., to whom the peanut had brought increased prosperity, voted $3,000 in 1919 for the erection of a monument to the boll weevil, on which was inscribed the following:

> In profound appreciation of the boll weevil and what it has done as the herald of prosperity, this monument is erected by the citizens of Enterprise, Coffee County, Alabama.

For a few years the peanut boom made money for the farmer. After the armistice in November 1918, however, the combination of decreased demand for vegetable oils and heavy importations of Oriental peanuts lessened for a time the interest of southern farmers in this crop. Yet the acreage in the Cotton Belt, after fluctuating over a period of years, has increased sharply since 1929, and so long as the weevil menaces the prosperity of cotton growers the peanut is likely to be a leading money crop in the program of crop diversification in the Southern States. Moreover, mills crushing cottonseed welcome the peanut to their communities, as it furnishes employment for their plants after the cottonseed crushing is over. During the 1939–40 season about 65 peanut-shelling plants were reported in operation in the Southeastern States, about 22 in the Southwestern States, and about 34 in the Virginia-North Carolina area. A tabulation of the acreage, yield per acre, and production of peanuts picked and threshed from 1929 through 1939, will be found on pages 64 and 65.

COMMERCIAL TYPES AND VARIETIES OF PEANUTS

Three separate types or varieties of peanuts are recognized in the commercial channels of trade—the Virginia type, the Spanish, and the Runner. Typical samples of each of these are shown in figures 1, 2, and 3. They are all reduced in the same proportion, so their comparative sizes can be seen.

Several varieties are included in the Virginia type, all of which lose their identity as soon as they reach the cleaning mill and become known merely as Virginias. All are large-podded and the kernels are covered with a reddish skin. In southeastern Virginia and north-

AMS 1090

FIGURE 1.—Typical lot of farmers' stock Virginia-type peanuts. (Reduced about 30 percent.)

eastern North Carolina, where most Virginias are produced, the Virginia Bunch and the Jumbo are sold separately, and some growers sell Virginia Runners and North Carolina Runners as individual varieties. Virginia Bunch is the leading variety in Tennessee. It is thought that the various Virginia varieties all developed from one, a running plant. A few plants having a bunch habit of growth were noticed, segregated, and developed into a distinct variety known as the Virginia Bunch. The Jumbo was evolved from selected strains of large size Bunch and Runners and is now considered a fixed variety. Some peanut producers, however, still call any large-size Virginias,

Jumbos. The Jumbo variety is distinct from the jumbo grade [5] which may consist of selected large nuts from any of the several varieties of the Virginia type.

All the peanuts sold commercially in the shell for roasting are of the Virginia type.[6] The extra large Virginia shelled peanuts are nearly all salted, sometimes appearing on the market as "jumbo salted," and Virginias of the new medium grade are also generally salted. But most No. 1 and No. 2 Virginias are made into peanut butter and peanut candy, though some No. 1 Virginias were formerly salted. The relatively low oil content of Virginias makes it unprofitable to crush them under normal marketing conditions.

AMS 1089

FIGURE 2.—Typical lot of farmers' stock Spanish peanuts. (Reduced about 30 percent.)

The Spanish or White Spanish peanut, which is grown from the Atlantic to the Pacific, is the most widely distributed variety in the country. Georgia, Texas, Alabama, and Florida lead in its production, with lesser quantities found in the piedmont section of Virginia and North Carolina, in Oklahoma and in Arkansas, and with noncommercial production in South Carolina, Mississippi, Missouri, and Louisiana. The pods are of small size and the skin covering the

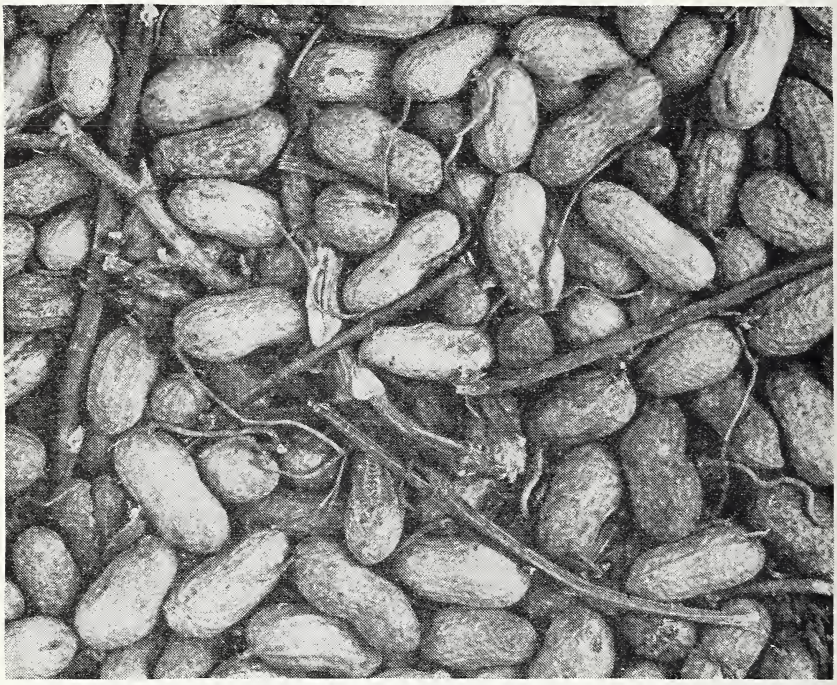
[5] Specifications for the jumbo and other grades of peanuts can be obtained from the Agricultural Marketing Service, U. S. Department of Agriculture, Washington, D. C. See also pp. 38 to 40.

[6] Except that in 1938 and 1939, Valencias grown on a fair-sized acreage in New Mexico were sold in the roasted state.

kernel is of a brownish shade as compared with the reddish color of the skin of the Virginia type. The plant is upright in growth and is harvested easily as the pods are closely centered near the surface of the ground.

The Improved Spanish has a larger pod than the White Spanish, of which it is a strain. Commercially it is rarely sold distinct from the small Spanish.

Salters, peanut-butter manufacturers, and candy makers all use shelled Spanish peanuts. Spanish have a higher oil content than either Runners or Virginias, and during recent years especially large quantities have been crushed for oil.



AMS 1091

FIGURE 3.—Typical lot of farmers' stock Runner peanuts. (Reduced about 30 percent.)

The Runner peanut is grown commercially over a large acreage in Alabama, Florida, and Georgia. The pod is of medium size, more nearly resembling a Spanish than a Virginia-type pod, but the kernel is on an average about the size of a No. 1 Virginia shelled peanut. The skin covering the kernel is a reddish brown. The Runner probably developed from the African or the Wilmington variety, which were practically identical, but its appearance has been so changed in its new environment that it has for many years been considered a distinct variety. The Runner, sometimes called the Georgia Runner or the Alabama Runner to distinguish it from the Virginia Runner has, as its name implies, a spreading rather than a bunch form of

growth. In Alabama it generally yields more heavily than the Spanish peanut.

The Runner was formerly grown primarily for hogging-off [7] or for crushing into oil, but during recent years it has found an increasing market in the manufacture of peanut butter and to some extent in peanut candy as a substitute for shelled Virginias. As the oil content is relatively high it is crushed rather heavily during years in which the production of peanuts is greater than the demand for edible purposes, as has been the case during several recent years, or when peanut oil is sufficiently high in price to make crushing profitable.

Of the less important peanut varieties the Wilmington is grown in decreasing volume in southern North Carolina. It is bought by mills in that State and in Virginia as "shelling stock," and appears on the market as a shelled Virginia. The Valencia, once grown commercially in Tennessee, Virginia, and North Carolina, has recently been planted to some extent in eastern New Mexico, where the peanuts are roasted and sold in nearby towns. The Tennessee Red Skin and the Tennessee White Skin are still occasionally found, usually in small plots in the large-podded peanut belt.

IMPORTED PEANUTS

Some years ago large imports of peanuts came into the United States, chiefly from China and Japan. These Oriental imports were evidently grown from carefully selected Virginia-type seed, as even experts had no infallible way of distinguishing the imported nuts from the domestic when shelled. Unshelled peanuts from Japan, however, were usually distinguishable by the bleached appearance of the shell.

During 1937, 1938, and 1939 more peanuts came into the United States from the Philippines than from any other source. These peanuts are said by importers in California to be of the same origin as those produced in Java, which were imported into the United States in relatively small lots before the imposition of the present tariff rates. Their flavor is considered less desirable by Pacific Coast importers than that of domestic Spanish, which they resemble considerably in appearance, but they are used in manufacturing peanut butter which sells only slightly below the price of peanut butter made from American-grown peanuts.

HARVESTING AND CURING

The date of harvesting peanuts varies widely in different sections of the country. In South Texas digging begins between the middle and the last of July, whereas in North Texas it may not be completed before late November or early December. In the commercial areas in the Southeast, Spanish peanuts are dug from early August to the middle of September, and Runner peanuts are dug during the latter part of September and in October. In the Virginia-North Carolina section digging also usually begins in late September or early October but extends for several weeks. Picking in the Southeastern States is usually over by late November or early December, but in the Vir-

[7] Hogging-off is the practice of turning hogs into peanut fields to eat the peanut vines and root out the nuts.

ginia-North Carolina area it is often not completed until late December. In the Southwest, picking is usually done as promptly as possible, to lessen the damage to the windrowed peanuts.

Producers endeavor to harvest their peanuts before the first frosts in order that the vines may have greater value for stock food. The vines have a slightly yellowish appearance when the plants are ready for digging, although the yellow tinge is more pronounced in vines of the Spanish type at maturity than in those of the Virginia type. Spanish peanuts frequently mature somewhat irregularly, and at times early-formed nuts may sprout before the bulk of the crop is ready to harvest. Peanut producers in Spanish areas must therefore exercise good judgment in determining when to dig in order to obtain the largest proportion of mature kernels.

A test for maturity is to dig a few plants and crack a number of pods. If the shell shows darkened veins inside, the peanuts are sufficiently developed to dig. Soft white linings in the pods are a certain indication of immaturity. Such pods may seem fully formed outwardly, but if the crop is dug and stacked at this stage many of the kernels are likely to shrivel. And the trade objects seriously to shriveled peanuts. If digging is deferred too long, however, the little stems or pegs connecting the pods with the plant may rot and some of the pods may be lost. This is especially true with Spanish peanuts.

Most peanuts are "plowed out" with an ordinary plow from which the moldboard is removed and a special peanut point substituted. Some farmers, however, use a special peanut digger, of which there are several types on the market. In Virginia and in the Southeastern States it is customary to dig the vines in the morning, shake off the soil by hand, and after allowing the vines to dry, to shock or stack them in the afternoon. The stacks are built around poles or split stakes about 7 feet high, thrust firmly into the ground. Stout crosspieces are nailed about 8 inches from the ground to keep the vines and nuts off the damp earth and to provide ventilation. The vines are stacked evenly around the poles with pods to the center, pressed down occasionally, and capped by a little dry grass or other material as a protection from rain. A well-made peanut stack is shown in figure 4. Curing in stacks normally requires from 4 to 6 weeks, though in favorable weather adequate curing in 3 weeks is possible. As peanuts are generally sold by weight, shriveled peanuts result in loss in weight as well as in quality. Moreover, if picked when partly cured the kernels may mold in the pods.[8]

Peanut growers in Texas rarely use the stake method in curing. In that State, after the peanut vines are dug they are raked into windrows or forked into small piles about 2 feet high, and are cured in the open without protection from the weather. If the weather is hot and dry, curing may be completed in 4 to 10 days, but often rain falls before the peanuts are cured. Wet weather either delays the threshing or picking operations, or results in the threshed peanuts containing too high a proportion of moisture. To a slight extent this method is used in the Southeastern States for curing early harvested Runners. Peanuts so cured may be expected to have a high percentage of weather-damaged kernels.

[8] For details of harvesting see Literature Cited (7), p. 120.

In Oklahoma the use of stakes for curing peanuts is more general than in Texas. Stacked peanuts will cure in 2 or 3 weeks in the hot summer weather, but a longer time is required if the peanuts are not dug until fall.

PICKING OR THRESHING

In the early days of the industry picking the pods from the vines was done entirely by hand, mostly with Negro labor, but for many years the use of machines to remove the pods has been general.

Three-quarters of the peanuts in the Southwest are still removed with grain-threshing machines having a special cylinder adapted to

BPI 71

FIGURE 4.—A well-made stack of Virginia-type peanuts, before settling has taken place. Proper curing normally takes at least a month in the Virginia-North Carolina section.

handling peanuts, though the recently developed South Texas peanut area has about half threshing machines and half peanut pickers. Threshers or peanut pickers of the cylinder type are also used to some extent in the southeastern tier of States, and occasionally in the large-podded area.

A carefully regulated cylinder-type threshing machine gives fair results in removing Spanish-type peanuts from the vines, and leaves little trash with the pods. Usually, however, sufficient care is not shown in so adjusting the speed of the cylinder as to reduce trash and dirt

to a minimum. A greater breakage of pods and kernels also occurs with a threshing machine than with a specially designed picker, thus increasing the percentage of splits or No. 2 peanuts. Kernels in cracked pods often become moldy and rancid. Further, although it is practically impossible for weevils to penetrate a sound, unbroken shell, broken pods offer an opportunity for weevil injury in storage. Breakage of the pods in the thresher is reduced to a minimum by proper feeding into the hopper and by properly regulating the speed of the cylinder.

The large-podded varieties of peanuts tend to break badly in threshing machines, and in Virginia and North Carolina the thresher type of machine has been rather generally replaced by patented picking machines, which are found frequently also in the Southeast. (See fig. 5.) In these machines the vines are drawn over a horizontal frame,

BAE 5269

FIGURE 5.—A commercial peanut picker in operation. The pile at the left of the picture consists of vines and foreign material remaining after the pods were picked; the lumber at the extreme right is a portion of the stakes around which the vines were stacked and which are not usually removed until the stacks are brought to the picker.

fitted with a wire netting or steel screen. Springs separate the vines; the pods, which are caught in the netting, fall through and are pulled from the vines with little breakage, while the vines are carried away on a chain conveyor. Many machines have one or more recleaning attachments, designed to remove much of the dirt and trash adhering to the pods, and a fan that blows out sappy peanuts and trash.

A new type of picker was placed on the market in 1939 that combines certain features of both the chain and the cylinder types of picking machines. It employs one main picking cylinder, above which are mounted smaller feeding and stripping cylinders. The feeding cylinder turns more slowly than the picking cylinder and holds the vines while the larger cylinder picks off the nuts. The stripping cylinder

carries the vines from the main cylinder to the vine rack, where remaining nuts are sifted out as the vines are removed. An air blast can be regulated to carry away any desired proportion of pops, as it blows out vines and leaves. Suction fans underneath the feed table draw off the dust, thus making working conditions more comfortable.

Few of the farmers who grow peanuts in Virginia and North Carolina own picking machines. The work is usually done by a traveling or custom picker who operates his machine for a given charge a sack of peanuts picked. During the 1938–39 season this charge ranged from 15 to 25 cents, mostly 18 to 23 cents a 4-bushel bag of farmers' stock, according to the amount of competition, and whether or not the farmer furnished some of the necessary labor. Whether or not the picker hauled the peanuts to market after the picking was completed also entered into some transactions.

Picking charges in the Southeast depend upon the time of the season and the extent of competition among the pickers. During the early part of the 1937–38 season, when farmers were eager to have their peanuts picked, the charge for picking the peanuts and baling the hay totaled around $8 a ton. After peanuts begin to get scarce and competition increases among the picking machine operators they start cutting prices, and later in 1937 contracts were sometimes made as low as $6 a ton for both picking the peanuts and baling the hay.

As most operators of peanut pickers also operate trucks for hauling peanuts to market, they often make one charge for several operations. In 1938 the usual price in Georgia for picking the peanuts, baling the hay, and hauling the peanuts to market was $11 a ton.

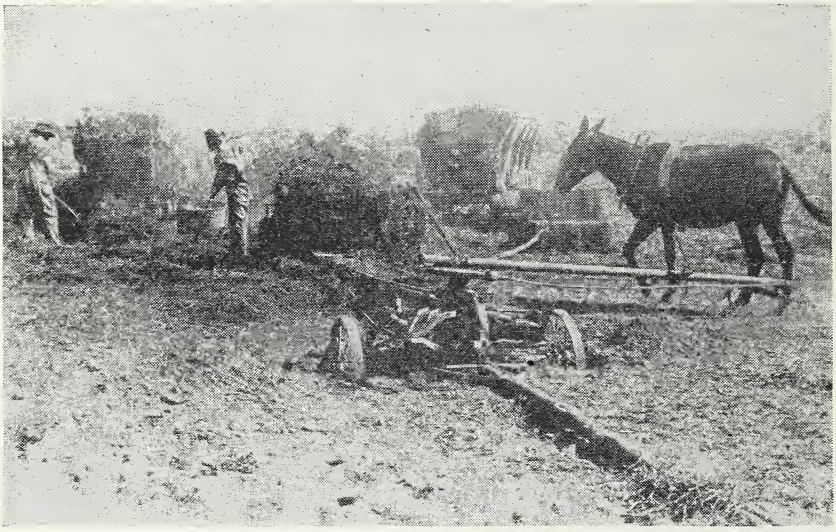
In Texas in the fall of 1938 the charge for picking was the same as that for threshing—mostly 10 cents a 30-pound bushel, but occasionally up to 12½ cents a bushel. Baling charges were extra.

Since the income of the commercial picker is dependent on the volume of peanuts picked, there is a tendency on the part of some operators to feed peanuts into the machine as fast as it will take them, and the special attachments are often removed as a means of increasing the speed of the machine. The result is that too much trash and dirt and portions of vines often come through the picker with the pods, increasing the volume of the farmer's lot of peanuts, but lowering the grade. Millers say that the proportion of dirt and trash in farmers' stock generally ranges from 3 to 5 percent. Although at times it is under 3 percent, especially in the Southeast, it occasionally exceeds 5 percent, especially in heavy soil in the Virginia-North Carolina section. Also, a very dry period may cause the vines to break up more than usual, and thus more trash is blown into the bags.

Peanut vines and stems are often baled shortly after being blown from the picker or thresher. The baler may have a separate small engine, or it may be run by power from the engine used for the picker. At times (fig. 6) the balers are operated by mule power.

In Virginia and North Carolina peanuts are usually sacked directly from the picking machine after picking, 4-bushel bags holding on an average about 88 pounds of Virginia-type or 120 pounds of Spanish peanuts being used. In Texas some bags of this size may be found, but often miscellaneous second-hand sacks are used, which generally hold 2 bushels of peanuts. After the tops of the bags are sewed they may be hauled to a peanut-storage building on the farm or at a town

nearby, to a local peanut factory, to a country merchant or other buyers, or, especially in the Southwest, occasionally to a railroad station for shipment. Practically all farmers' stock peanuts in the Southeast move in bulk. In the Southeastern and Virginia-North Carolina areas nearly all farmers' stock now goes to market by truck; and much of that in the Southwest. Because of lower freight rates in 1938, more Virginia-type farmers' stock was shipped by rail in that year than for years previously. Warehousemen and millers prefer rail shipments, because they do not have to be handled as quickly as truck shipments.



AMS 1175

FIGURE 6.—Peanut baler in southern Alabama, operated by mule power. Complete bales can be seen in the right center, in front of the truckload of farmers' stock peanuts, which has been filled from the peanut picket seen in left center.

In the Southwest, less barn space is available than in the other two areas. When peanuts are not sold in the fields to the millers to be hauled away (fig. 7), as is the common practice, the growers customarily rick up the bags of peanuts in the open, like cordwood, one or two bags wide and about 6 feet long. Often the peanuts are threshed when too green, but the wind blowing through the bags dries them out fairly well. Sometimes the piles are broken down after a few days, to prevent the green peanuts from packing together too closely in the bags, and then are built up again. The better growers usually place a tarpaulin or other cover over the top of the bags for partial protection against rain. Although the pods become discolored the kernels are rarely seriously damaged by this treatment.

The unit of sale in Texas, Virginia, and North Carolina for the Spanish variety is the 30-pound bushel. The large-podded nuts in Virginia, North Carolina, and Tennessee, weighing about 22 pounds to the bushel, are sold by the pound. Southeastern Runners weigh about 28 pounds to the bushel but they are always sold on the basis

of the 2,000-pound ton, as are Southeastern Spanish, which weigh 30 pounds to the bushel.

HOW PRODUCTION IS FINANCED

Most peanut growers find it necessary to borrow some money or to use credit in growing their peanuts. This financial assistance may be used to buy seed, fertilizer, supplies, or to hire farm labor. The method of financing production is important because it may determine the method of sale of the harvested product and when it shall appear on the market.

In the Virginia–North Carolina section a much larger proportion of the crop is produced on small farms operated by the owners than

AMS 1180

FIGURE 7.—Spanish-type farmers' stock peanuts, packed in irregular-size bags, trucked to a storage house in Texas.

in the Southeastern States, where peanut production is carried on principally on large farms operated under the plantation system. In both sections supply stores or "time merchants" formerly played a more important part in financing peanut production than they have done since the introduction of the Federal production credit associations.

Production credit associations, which have been active in most peanut areas, are cooperative organizations that are managed by local men. The borrower must buy stock in his local association equal to 5 percent of his loan, and each member has one vote. Loans may be

arranged to take care of the farmer's needs for a whole season, but the money is obtained only as needed, thus making the interest less than if the money were all obtained at once. The notes signed by those who borrow from a production credit association are usually made to mature when the crop is harvested, though if the farmer wishes to hold his peanuts for a future market the note can be extended. The security given for such a loan is usually a first lien on the crop, and in general the chattels of the borrower are included as additional security for the loan. The interest charged on such notes in 1938 was 5 percent, and in addition there was a loan service fee to take care of examiners' expenses and filing costs. These notes are discounted with the nearest intermediate credit bank.

Local banks supply most of the money for loans in many sections. The banks take a crop lien on the crops produced on the farm and include in the lien as additional security all of the chattels owned by the borrower. Bank loans are rarely made for longer than 6 months though they may be extended if the crop has not been sold at the maturity of the loan.

In most of the leading peanut-producing counties the supply merchant is still a very important factor in extending credit for financing production operations. These stores or "time merchants," especially in the Southeast, carry practically every article needed by the farmers, from fertilizers to provisions and clothing, and allow liberal credit to their farmer customers, sometimes even carrying sharecroppers for the landlord's account.

In some of the counties in the area where large-podded peanuts are produced the fertilizer manufacturers or their agents furnish farmers to a limited extent with fertilizer, lime, land plaster, and peanut bags, and charge the grower "time prices" for these supplies, which are said to be substantially above cash prices.

Supply merchants also are said to charge high interest rates for the advances made to their credit customers. Strangely enough, in many instances the borrowers from the time merchants could obtain adequate advances from the banks or the production credit associations, but because they have been doing business for years with the time merchants they seem reluctant to make new financial connections. To an increasing extent, however, peanut farmers are borrowing money early in the season from banks and production credit associations, paying cash for their supplies, and paying only customary interest charges for the money so advanced.

When credit cannot be obtained elsewhere, emergency crop and feed loans are sometimes obtained through Federal sources in amounts not exceeding $400. They are secured by first mortgages on the crop and on the chattels of the farmer. Loans of this type were less numerous in 1938 than when emergency seed loans first became available.

Usually the supply merchant and the agents of fertilizer companies control the time of sale of all crops sold by farmers to whom they furnish supplies on credit. When liens for the supplies fall due, usually about the time the crop is harvested, pressure is sometimes brought to bear on the farmers to force the sale of the crops to satisfy the liens regardless of market conditions. This tends to create a condition of oversupply on the market at the time, resulting in a lowering of prices to the grower. Sometimes

the holder of the lien offers to buy the entire crop of the borrower at prevailing market prices, applying the proceeds of the sale to the credit of the lien and paying the borrower the difference, if any. This offer, however, is often effective only after the market has declined and thus not only results in a lower price to the grower but permits more speculative peanuts to come on the market later in the season, possibly to exert a downward influence on the market at that time. Fortunately the increasing use that growers are making of the facilities of local banks and production credit associations allows them more latitude in determining the time at which they shall sell their peanuts.

In the fall the Government agencies, and in some sections the supply merchants, place peanut millers on notice regarding the mortgages that they have taken against the crops of various farmers. If at the time a farmer takes his peanuts to market he cannot show a receipt for the money that he owes, the miller is expected to remit a portion of the money due for the peanuts direct to the holder of the mortgage or to the Government credit agency.

Cleaners and shellers rarely do any direct financing of the growers in their territory, except that in the Southeastern States shellers frequently furnish seed to the farmers, to be paid for after the crop is produced.

MARKETING METHODS

As the peanut finds its way into consumption today it is essentially a manufactured or milled product. The Virginia-type peanuts that are sold in the shell by the vending trade have been cleaned, polished, powdered, and assorted into sizes before leaving the mill. Finally, they are roasted before being sold to the consumer. Shelled peanuts require even more handling before they reach the form in which they are offered for sale. Thus two main steps of distribution enter into the marketing of peanuts: (1) Movement from the farm to the cleaning, shelling, or crushing plant, and the milling operations necessary to place the product in condition to ship; (2) movement from the mill to the ultimate consumer.

Methods of Marketing Farmers' Stock Peanuts

The bulk of the peanut crop is sold by the growers within a few months after the stock has been harvested and picked or threshed in the Southwest and Southeast and only a comparatively small portion of the crop is found in the hands of the growers by the middle of January. Farmers in Virginia and North Carolina can hold their peanuts longer than those in the States to the south both because of a later harvesting period and because of more abundant farm-storage facilities. By the first of May, however, relatively few peanuts still remain on the farms in Virginia and North Carolina, the bulk of the crop having found its way either to cleaning and shelling plants or to commercial or cooperative storages.

Farmers who are under obligation to local merchants, banks, or production credit associations for credit advances during the growing season, usually sell a large portion of their crop, and sometimes all of

it, soon after it has been threshed or picked in order to take care of their indebtedness. Even farmers who have not received credit advances often want to sell enough peanuts to obtain some "cash money." The usual result is that more peanuts than the market can readily absorb are offered just after the opening of the new season, and the price declines. Speculation in farmers' stock peanuts is not as widespread as it was 10 years ago but it still exists to some extent.

Special features of marketing in the three leading peanut sections are discussed separately.

VIRGINIA AND NORTH CAROLINA

When a grower is obligated to a "time merchant" or to a fertilizer agent for credit advances, he usually turns enough peanuts over to them soon after picking to satisfy the indebtedness. Sometimes the merchant purchases the entire crop, in which case he buys the peanuts outright, and gives the grower the difference in cash between the amount of the debt and the purchase price.

Farmers who do not have to sell to local merchants to take care of credit advances often dispose of their picked and stored peanuts for cash to representatives of the cleaners. These representatives may be traveling buyers or local merchants. The usual commission paid by cleaners for buying peanuts during the 1937–38 season was 5 cents a bag, though where the buyer also hauled the peanuts to the cleaning plant 10 to 15 cents a bag was paid, depending on the distances to be hauled. Some cleaners pay their buying representatives a salary rather than a commission.

Many growers personally truck their peanuts to the mills, often visiting several cleaners in an effort to obtain the highest possible prices. Occasionally a cleaner will need a load or two of peanuts of a certain grade or quality to complete an order, and will pay a slight premium for them. Some millers will pay more of a premium than will others for especially high-quality peanuts. It is often worth the grower's effort, therefore, to make preliminary inquiries before selling his peanuts.

Truckers often serve as salesmen for the growers. Their charge for trucking the peanuts to market and selling them ranges from 10 to 15 cents a bag, according to the distance to be hauled.

Growers often ship their crop to a commercial warehouseman to be stored and sold on order. Some cleaners also store peanuts for the growers, but the practice is not as common as it is in the Southeastern States.

GEORGIA AND ALABAMA

Now that the use of trucks has become general, it is no longer so essential as formerly to market peanuts at the nearest shelling or crushing mill. But prices tend to be rather uniform, and a grower usually has little to gain by hauling his peanuts away from his immediate neighborhood, except when a particular sheller or crusher is endeavoring to fill up his bins rapidly and is willing to pay a premium for that purpose, or to pay a premium greater than normal for high-quality nuts. Most crops of independent farmers are therefore sold for cash direct to a nearby plant. Sometimes the operator of a picking

machine serves as a trucker also and may suggest the mill to which to sell the grower's peanuts. In such cases the miller may have arranged to pay the operator-trucker a specified premium, often 50 cents to $1 a ton, but occasionally up to $2 a ton for all peanuts hauled to him, above the regular hauling rate of $1 or $2 a ton. generally $2, which is also usually paid by the miller.

Producers under obligation to local merchants usually sell their entire crop to these merchants, since as a rule the latter will pay a cash price equal to that offered by the nearest sheller for all peanuts in excess of those required to settle the account, or will allow a higher price if the grower is willing to have the returns apply on future trade.

Millers often contract to purchase some farmers' stock peanuts at a specified price, weeks and even months in advance of the time they are picked. In this way they have assurance that stocks will be available to take care of at least a portion of their future sales contracts, and thus enable them to figure selling costs of futures more exactly.

TEXAS

Peanuts normally leave the farms more rapidly in Texas and adjoining States than in the other two leading sections. Most of the crop that is not hauled direct to a mill is bought from the farmers either by salaried buyers of the shelling plants, or by local merchants, who may definitely represent shellers or may be independent dealers selling wherever they can make the most profit. The farmer is paid cash for his peanuts.

Though some mills have storage houses for their own use scattered throughout the producing areas, few commercial storages are available in Texas, and the farmers have little storage space on their farms. Accordingly, farmers begin to sell their peanuts as soon as a few are available. If a farmer wants to hold his peanuts for possible higher prices, he ricks them up in the open, as indicated on page 12. The quality of the kernels seems to be rarely affected by this method of storage, even though the pods may become badly weather-beaten.

Where buying is done for the shellers on a commission basis the rate is about 2½ cents a bushel, but much of the purchasing is done by salaried buyers who travel through the producing areas, getting in touch with individual farmers.

Distances from the south Texas producing area to the mills in north Texas are greater than in any of the other producing sections, and although many peanuts not used by south Texas mills go north by truck, some of them are still shipped by train. Threshers do not serve as truckers in this area. In recent years the peanuts have usually been sold in the fields direct to a representative of a miller or to an independent buyer, who trucks them to a mill or storage house, though in some cases the grower does his own trucking to the mill. In the latter case he is paid slightly more, to take care of the trucking costs.

Less speculation is noticeable here than in the peanut areas farther east as facilities for storage are lacking except in mills or warehouses of the millers, and merchants who serve as independent buyers rarely hold the peanuts long but usually sell them to the millers soon after purchasing from the farmers. Advance contracting of farmers' stock is almost never done in this section.

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Warehousing

When the harvested peanuts are hauled from the field, they may be stored temporarily in any available space so long as it is dry and well ventilated. Sheds and lofts of barns are commonly used, and the large independent growers often have frame warehouses. If the peanuts are to be kept on the farm for any length of time, however, protection from rats and mice should be afforded. Some growers attempt to keep out the rats by building the floors of the storage house above the ground. Others find that the only way the sheds can be made ratproof is by lining them with ¼-inch mesh galvanized wire.

Many growers in the large-podded area prefer to store their peanuts in commercial warehouses (fig. 8), so that they can obtain loans

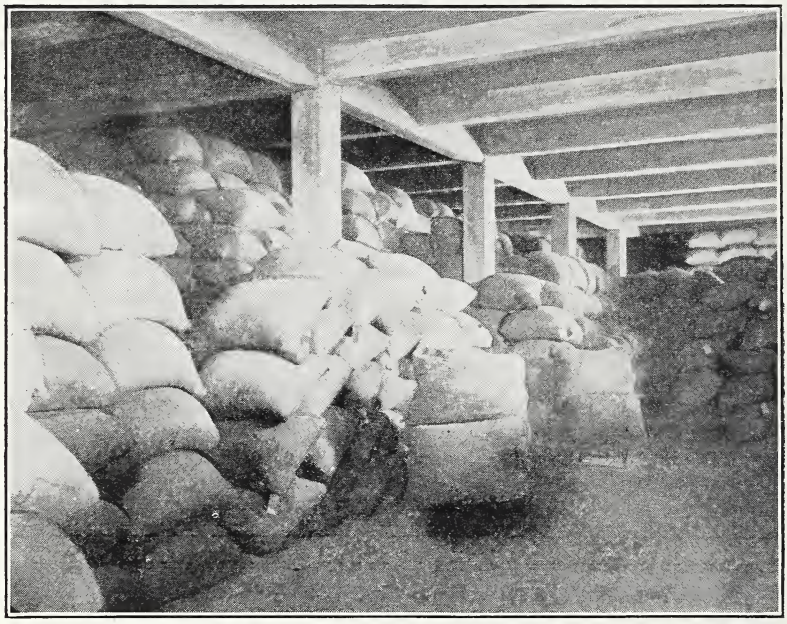

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Figure 8.—Farmers' stock peanuts in a commercial storage house in Virginia. The use of tags assures the owner of having his own stock returned to him or sold for his account.

on them from the warehouseman or from a banker. Cleaners also like to buy from commercial warehouses because in cases where money has been loaned on them the peanuts have been inspected for grade and condition. Numerous storage warehouses have been available for years in the peanut belt of Virginia and North Carolina, and some cleaners, usually at outlying or "country points," store farmers' stock peanuts in their warehouses for the growers.

The Southeastern States have fewer commercial warehouses than the Virginia-North Carolina section, but this is compensated for by the fact that practically all shellers will store farmers' stock peanuts and advance 70 to 80 percent of the market value on them. Very few commercial storages are available in the southwestern peanut belt.

In Virginia, North Carolina, Tennessee, and the southwestern area, peanuts are all stored in sacks; in the Southeast, in bulk. In either case, a shrinkage loss of about 3 percent in weight during the average storage period is considered normal.

The grower who is able to hold his crop may haul or ship his peanuts to the warehouse as the weather permits, and receive a warehouse receipt. As the modern warehouses are well ventilated and practically fireproof and ratproof, peanuts can be stored in them under conditions far superior to those obtainable on most farms. Further, it is only natural that mills should prefer to have goods delivered to them from a clean, dry storage than from the type of storage available on most farms.

Warehousemen are usually willing to make a loan on peanuts stored with them of about 75 percent of their current market price, though occasionally only 60 percent. This often allows growers to hold for a possible better market instead of dumping on the market when prices are unfavorable. If the grower prefers he can pledge his warehouse receipt as collateral for a loan at almost any bank. But as the bank will rarely lend more than 60 percent of the market value of the peanuts, unless the borrower's credit justifies a higher percentage of valuation, most growers obtain their loans from the warehouseman, who in turn may use the warehouse receipts as collateral in borrowing from a bank.

Usually peanuts having loans against them are sold by the warehouseman when and as directed by the grower storing them. The amount of the loan, plus interest, storage charges, and the commission charge of 5 cents a bag, are deducted when the sale is made, and the remainder is remitted to the grower. In the Southeastern States storage charges include the commission for selling the nuts.

Peanuts stored with shellers and cleaners are usually sold to them whenever the grower decides to do so. In the Southeast, storage charges are usually remitted if the peanuts are sold to the sheller in whose house they are stored, but must be paid if the peanuts are removed and sold to someone else.

During the 2 to 3 years prior to 1939 the charge for storage in commercial warehouses in Virginia was about 3 cents a month for a 4-bushel bag, with a selling charge of 5 cents a bag, though for peanuts stored at country points in warehouses owned by cleaners a charge of only 2 cents a bag was sometimes made. The storage charge includes the cost of unloading, handling, reloading, and insurance.

Storage and insurance charges in the Southeastern States ranged widely in 1938 from 15 to 50 cents a ton, averaging 25 to 35 cents a ton. A weighing and inspection charge of 25 cents a ton was added to the first month's bill. In addition, warehousemen made a handling charge of about 50 cents a ton "in" and 50 cents a ton "out" of storage. A maximum storage charge of $3 a ton for the season was made in the Southeast in 1938.

Southeastern warehousemen consider that a ton of No. 1 Spanish farmers' stock will occupy 80 cubic feet; but that a ton of No. 1 Runner farmers' stock will require 100 cubic feet.

Warehousemen frequently obtain from the local banks the money needed to carry them. The usual arrangement is on a straight note up to a definite amount, after which the peanuts, as represented by

warehouse receipts and insurance policies with proper loss clauses attached, are pledged as collateral for further loans. As some of the bankers and cleaners are stockholders in warehouses, and some of the cleaners and warehousemen are also stockholders in local banks, a close interest exists among them.

UNITED STATES WAREHOUSE ACT

In September 1923, peanuts were named as a storable product within the meaning of the United States Warehouse Act, which is administered by the United States Department of Agriculture. The primary purpose of this act was to establish a form of warehouse receipt that would be acceptable generally as collateral for loans. Growers, merchants, cleaners, or shellers who store peanuts in warehouses under this act, are afforded security from loss, as the warehousemen are licensed by and bonded to the Government to preserve carefully and return the goods stored with them. Identical bags are returned if the peanuts are sacked; but if in bulk, any peanuts of the same grade and quantity can be delivered, unless definite arrangements were made to preserve the identity of a special lot. The licensed warehouses are subject to Federal inspection at least four times each year.

Warehouse receipts furnished by warehouses licensed under the Warehouse Act are accepted by banks generally, and in all cases by the lending agencies of the Farm Credit Administration, as collateral for loans.

Although the Federal Warehouse Act has not proved popular among the warehousemen it is believed that this is largely because of the restrictions that the act and the regulations place upon the warehousemen in their every-day operations and the further fact that most peanut-storage facilities are in the hands of men who are first and primarily interested in merchandising the crop and not in serving as public warehousemen. The primary purpose of the act is to produce sound collateral. To produce sound collateral it is essential that the warehousemen act according to certain prescribed requirements which are to some extent at variance with prevailing practices. But these requirements are considered essential in protecting the interests of the farmers who store their peanuts. In 1938 several warehouses were under license for storing peanuts in the States of Georgia, Alabama, Florida, and Virginia.

Grades for Farmers' Stock Peanuts

One important aid in the marketing of peanuts by farmers has been the establishment of definite grades for farmers' stock peanuts by the United States Department of Agriculture. Federal grades for farmers' stock Spanish peanuts were first issued in 1924 and were followed by grades for farmers' stock Virginia-type peanuts in 1926 and for farmers' stock Runners in 1931. All except the grades for Runners have since been revised several times.[9]

[9] As the Federal grades are subject to revision from time to time they are not given here. Latest copies can be obtained from the Agricultural Marketing Service, U. S. Department of Agriculture, Washington, D. C.

GRADES IN VIRGINIA-NORTH CAROLINA SECTION

Peanuts of the Virginia type reach the consumer both in the shell and as shelled goods. Although roasted peanuts in the shell are not being sold as extensively as formerly it is still usually more profitable for the cleaner to sell in the shell all peanuts that have the necessary size and appearance. Accordingly Virginia-type peanuts are still bought largely on the basis of the percentage of jumbo and fancy peanuts that can be picked from samples of nuts taken at random from the lot.

If the peanuts are brought directly to the factory the truckload is weighed and the lot sampled by the buyer for the plant. Sometimes buyers cut holes in bags and take out handfuls of peanuts from the center of the bag, but usually a few nuts are taken from near the top of the bag so that it can be sewed up again without damage.

Virginia-type peanuts are bought by variety and grade or appearance. Among lots in which the quality and appearance is about the same, Jumbo Runners will command a premium over Bunch and small Runner peanuts. (The term "Jumbo" is often applied to any lot, whether of the Jumbo variety or not, that will pick out more than a certain percentage of cleaned jumbos and fancys.) The term "shelling stock" is applied to peanuts that are either too small, too light in weight, or too weather-damaged to sell readily in the shell and accordingly are shelled. The selling price of shelling stock will vary according to the weight of meats contained, and the size and condition of the peanuts. Normally shelling stock can be expected to move at a lower price than good Jumbos and Bunch but heavy shelling stock, that will shell out a good proportion of extra large Virginias, may sell for as much as average Bunch peanuts. During recent years, when demand for shelled Virginias has far exceeded that of Virginias in the shell, some mills have not put out any cleaned goods but have run all their peanuts through the shelling machinery. The appearance of the pods is in this case of little importance; the condition of the kernels is the controlling factor. When market conditions warrant other mills shell everything but jumbo handpicks.

Peanuts are now inspected for grade much more carefully than was the case a few years ago. Most cleaning plants have in their employ men who are qualified to inspect peanuts quickly but carefully, and who can in a few minutes determine rather accurately the percentage of jumbo, fancy, extra large, medium, No. 1, and No. 2 peanuts in a sample of Virginia-type farmers' stock. The samples are usually shelled by hand, but small machine shellers are sometimes used. Small, but accurate, scales are used in computing these percentages.

After inspection the lot from which the sample was taken is priced according to the current market price for the variety and grade in which the sample is classified.

In some of the small mills, and especially when bought at country points, peanuts are sometimes purchased on appearance only without a detailed inspection actually being made. An experienced buyer can dip his hands into a bag of farmers' stock a few times, look at the separate samples of peanuts brought up in this way, estimate the

weight of the bag by lifting it from the ground, shake it a little to decide whether there seems to be excess dirt, and then make his offer. Usually, however, these buyers have had enough experience and practice with estimating peanuts that they can come very close to knowing just how the peanuts in the bags they look at will weight out. Occasional cleaners and warehousemen inspect strictly according to the Federal standards, estimating not only the percentages of U. S. No. 1, U. S. No. 2, and U. S. No. 3 peanuts in a lot but also by classes A, B, and C, which call for definite percentages of sound and mature kernels in the sample.

The percentages of the different grades of peanuts in a crop of Virginia-type peanuts will vary greatly from season to season. In a crop following a dry season the percentage of jumbos, and also of shelling stock, is likely to be much greater than in a crop grown during a year in which rainfall was abundant. Following a wet season a larger crop will be harvested but the average size of the pods and kernels will be less than during a dry season.

As an indication of shifting tastes on the part of the American public it is interesting to note that during the 1920–21 season—the first one for which we have shipment statistics—the movement of peanuts in the shell out of the Virginia-North Carolina section represented over 50 percent of the total shipments from that area, farmers' stock basis. During the 1937–38 shipping season 75 percent of the shipments from that area, farmers' stock basis, were of shelled goods.

During the average season slightly more jumbos are shipped than fancys, possibly in the proportion of 3 to 2. Of the Virginias going through the shelling machinery about 25 to 30 percent are extra large, about 50 to 60 percent are No. 1 Virginias, about 12 to 15 percent No. 2 Virginias, and the remainder No. 3 Virginias and oil stock. These percentages were estimated before the recent addition to the standards of the grade for "mediums". They will vary widely from season to season.

Farmers' stock Spanish peanuts in the Virginia-North Carolina area are bagged in 4-bushel sacks as are Virginias, but are sold on the basis of the 30-pound bushel. Less attention is often paid to careful inspection for grade of Spanish farmers' stock peanuts here than in the Southeastern States, though warehousemen and some of the shellers make a careful inspection by shelling a sample of the farmers' stock and weighing out the proportion of the shelled nuts of the several grades.

With both Virginia-type and Spanish peanuts more attention is paid to inspecting now than before the introduction of Federal grades, and to a greater extent than formerly high quality, carefully picked farmers' stock peanuts receive a premium.

According to millers and warehousemen in Virginia and North Carolina the average 4-bushel bag of farmers' stock Virginias contains 3 to 5 percent of foreign material. Even 3 percent is higher than necessary. The presence of this worthless material adds to the already high charges for hauling. When the picking machine is so carelessly adjusted or operated that excessive quantities of trash are allowed to drop into the bag of peanuts the grower pays a needlessly high picking fee. As the operator of the picking machine is paid a certain amount for each bag turned out by the machine he is often paid

for picking several bags of foreign matter during the course of the day. In addition the grower must pay the cost of the extra bags necessary in sacking the dirt, sticks, and other trash. The cleaner who buys the peanuts loses both in the added expense of separating the pods from dirt and trash and in paying peanut prices for this material. And transportation charges on the foreign material must be paid by someone.

As the grower is paid for the gross weight of the bags and their contents, naturally the cleaner will reduce his buying price when bags containing more than the average amount of foreign matter are detected. Some cleaners refuse to buy at any price bags of peanuts containing too high a proportion of dirt, trash, stones, and other foreign material.

GRADES IN SOUTHEASTERN AND SOUTHWESTERN UNITED STATES

Spanish and Runner types of peanuts are all shelled before they are shipped from the peanut belt. Therefore, the principal factor in determining the value of farmers' stock of these types of peanuts is the quantity of good kernels that can be shelled from a given lot. And since they do not move into consumption in the shell, the size of the pod is immaterial in determining the grade or the price to be paid, as is the case with peanuts of the Virginia type.

Formerly the inspecting for grade of both Spanish and Runner farmers' stock peanuts in the Southeastern States was done rather loosely, and adequate premiums were rarely paid for peanuts that were of better quality than the average. In 1924 the official United States grades for farmers' stock Spanish peanuts were first issued and these were followed in 1931 by grades for farmers' stock Runners.

These are now the official grades of the Southeastern Peanut Association, a trade organization taking in a majority of the shellers in the Southeastern States. These shellers follow the Federal grades rather closely in buying farmers' stock peanuts.

As peanuts are handled in bulk in the Southeastern States, it is more difficult to sample them adequately than is the case in the Virginia area and the Southwestern States, where bags are used. In grading a farmer's peanuts a representative sample is taken from different parts of the lot. Often a trier is used (fig. 9), which consists of a pointed tube with a round wooden filler, about 4 feet long, which is pushed slantwise into the peanuts in the truck. The filler is slowly removed and as the tube is worked back and forth peanuts fall into 6- to 10-inch slots along the side, which continue for about 3 feet. At times, especially in home-made triers, there is only one slot, about 3 feet in length. The filler is pulled out and the trier emptied, and when this is done several times a fair sample of the load is obtained.

The entire sample is weighed, the foreign matter is removed, the pods are shelled, usually by hand, and the weight of the sound, mature kernels is determined (fig. 10). The damaged kernels are weighed and if found to be more than is permitted in the United States grades the buyer makes a deduction from the prevailing price for peanuts of the grade which the lot meets except for damage. This deduction is to take care of the added cost of picking out the damaged goods by hand in the shelling plant.

Occasionally, especially when it is known that the grower has a

reputation for producing good quality nuts, they are not weighed and shelled but the value is determined by less precise inspection.

In the Southwestern States inspection is rather loosely done when peanuts are bought in the field. But when they are taken to shelling plants, samples are taken, weighed, and the pods hand-shelled to determine the proportion of sound, plump kernels and of foreign matter the same as is done in the Southeastern States.

Unless the peanuts are to be shelled at once, cracked or broken pods

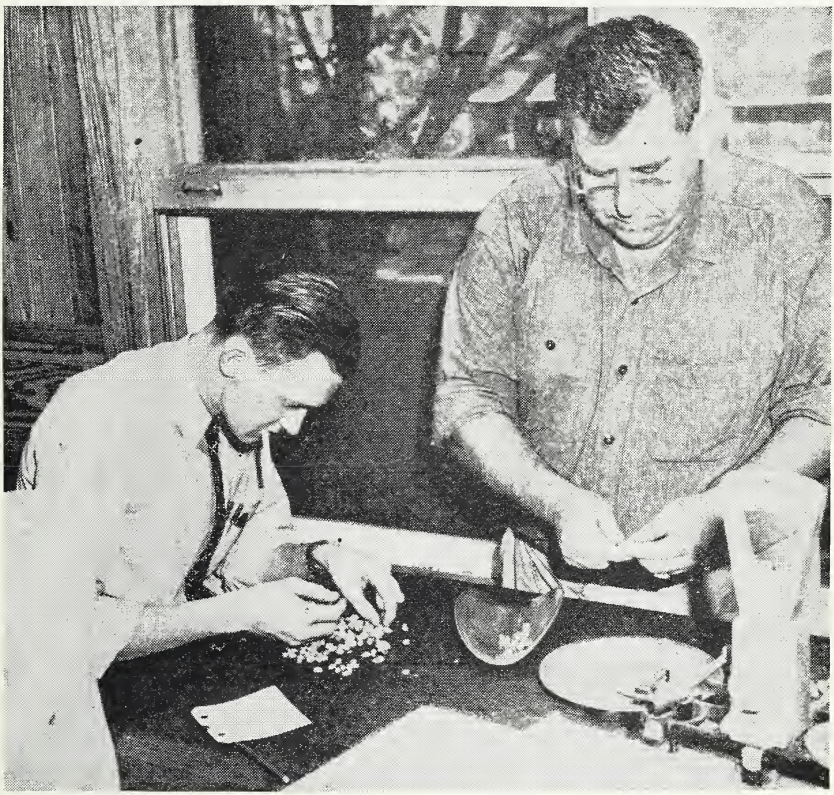
AMS 1185-B

FIGURE 9.—Using a trier to obtain a representative sample of Runner farmers' stock from truckload of peanuts in Alabama. As the 4-foot round wooden stock, which fits into the pipe, is pulled out, it allows peanuts to fall into the slots in the pipe. Sometimes, as in the home-made trier shown in this picture, there is only one slot, about 3 feet long.

are extremely undesirable in farmers' stock of any variety, as the kernels in the damaged pods are susceptible to mold, weevil attack, and rancidity. Such kernels reduce the quality of the shelled output and increase the shelling costs because of the necessity for picking out the damaged kernels as they pass over the picking belt. Further, kernels in cracked or broken pods often fall out during the handling process prior to their delivery to the shelling machinery and become

split or broken. Such kernels may become dirty or otherwise damaged so that they are suitable only for crushing or for stock feed.

Careful harvesting and picking of farmers' stock peanuts will pay good dividends in the higher percentage of No. 1 nuts obtained. A 30-pound bushel of farmers' stock Spanish peanuts should shell out about 21 or 22 pounds of kernels. In the Virginia-North Carolina section in 1937 about 16½ pounds of these were of the No. 1 grade, about 3 pounds of the No. 2 grade, the remainder being of the No. 3



AMS 1177-A

FIGURE 10.—Determining grade of farmers' stock Spanish peanuts in Alabama. The pods are shelled and the weight of both sound and damaged kernels is taken, to see whether full price should be paid for the load.

grade. In the Southeastern States the average yield of No. 1 Spanish is slightly higher, generally reaching between 17 and 18 pounds. Three pounds may be of No. 2 grade, leaving only about a pound of No. 3 grade or shelling stock.

In Texas, partly because of the lower humidity as compared with eastern producing sections, and partly because of the windrow-curing so generally practiced, the proportion of No. 1 peanuts is less than in other sections and the proportion of the other grades is higher. The outturn may average only 14 pounds of No. 1, 4 pounds of No. 2, and

2 to 3 pounds of No. 3 peanuts. The higher proportion of No. 2 peanuts in Texas is partly compensated for by the relatively higher price paid for No. 2 shelled goods in the Southwest than in the other sections because as a rule they are considered brighter and cleaner than No. 2 peanuts shipped from the Southeast.

Less attention is paid to the grades when oil mills buy peanuts for crushing direct from the farmer. Peanuts stored by cooperative associations during the 1937–38 and 1938–39 seasons, however, and diverted to oil mills for crushing were classified as to grade. Peanuts of the lower grades were crushed first so that the better stock would be available for the use of shellers as long as possible.

Premiums for Large-Size Virginia-Type Peanuts

The proportion of large nuts in a crop of Virginia-type peanuts varies to some extent from one year to another, depending upon the season, but price variations are no longer as wide as they were in the earlier years of the industry. In the 1920–21 season, for example, the first for which we have Government price records, extra large Virginia shelled peanuts sold at shipping points for more than 2½ times the price of No. 1 Virginias, and jumbos brought 1⅔ times the price of fancys. In no year since then have ratios of this kind been reached, though in 1930 extra large sold for 65 percent more than the price of No. 1 Virginias, and in 1928 jumbos brought 50 percent more than fancys.

During recent years jumbos and extra large have rarely commanded more than 25 percent premium over fancys and No. 1 Virginias, and at times the differential between them has been under 15 percent. Taking the f. o. b. shipping point prices in the Federal Peanut Market News Reports for February 1 of each of the 18 years ending in 1938, it is found that the average price for jumbos during that time was 25 percent above the figure for fancys; while extra large commanded a premium of 33 percent over No. 1 Virginias. If the year 1921 is excluded from the figures, the average premiums for the larger sizes would then read 22 percent for jumbos over fancys and 25 percent for extra large over No. 1 Virginias. The price fluctuations between the two sets of grades is shown graphically in figures 11 and 12.

Farmers' Cooperative Organizations

Attempts have been made, from time to time, to organize the peanut growers into cooperative groups for disposing of their crops.

The first serious effort, and one of the most ambitious, was the Virginia-Carolina Cooperative Peanut Exchange, formed in Virginia in 1919 for the purpose of buying bags, fertilizers, and other supplies cooperatively, and warehousing peanuts for its members. Reorganized in 1921 to permit it to sell members' peanuts, the exchange received from its 5,000 members nearly 800,000 bags of 1921 crop peanuts, or over 30 percent of the Virginia-North Carolina production that year. In 1922 it was reincorporated under the cooperative marketing act of Virginia and its name was changed to Peanut Growers Association.

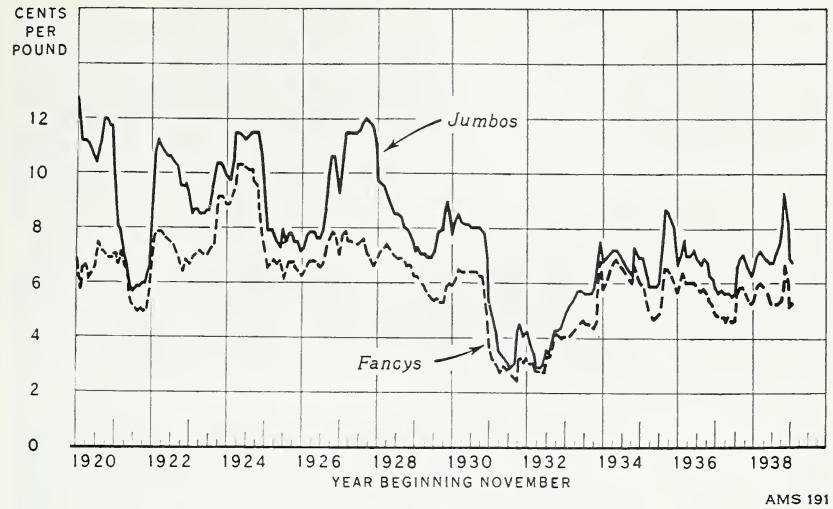


FIGURE 11.—Prices f. o. b. Virginia-North Carolina shipping points of cleaned jumbo and fancy Virginia-type peanuts, November 1920–December 1939. A wide range between the prices of jumbos and fancys indicates a scarcity of the large-size nuts.

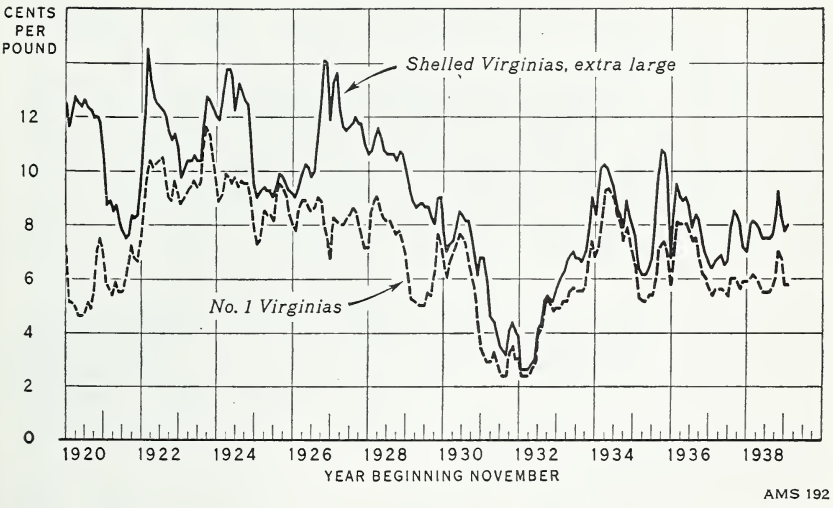


FIGURE 12.—Prices f. o. b. Virginia-North Carolina shipping points of shelled extra large and No. 1 Virginia-type peanuts, November 1920–December 1939. When large peanuts are scarce, the difference in price between shelled extra large and No. 1 Virginia-type peanuts is even more pronounced than between jumbos and fancys at the same time.

The members originally obligated themselves to sell and deliver to the organization all peanuts produced by them for a period of 7 years, except such as might be needed for seed or for farm or home use. They agreed further to pay the association as liquidated damages 2 cents for each pound of peanuts sold through any other agency than the association, but this provision was not honored. During the first 2 years of the life of the association, insufficient marketing experience of its officers and expensive overhead cut down returns to the growers and as a result the receipts of farmers' stock were lessened.

The cooperative was not financially in a position to acquire or construct a peanut mill of its own. Arrangements were made with Virginia millers to clean and shell peanuts on contract, however, and the association then entered the selling market as a competitor of established Virginia-North Carolina mills, though some farmers' stock was sold to these mills.

The association also tried out in a small way, chiefly through chain stores, the sale of raw shelled Virginia-type peanuts in 1-pound lithographed cartons, 2 dozen packages to the case, to wholesale grocers and others for distribution to the consumer through the retail trade. A brand name and trade-mark were adopted and stamped on the bags and cartons of peanuts packed by the association. This scheme of distribution was experimented with for only one or two seasons.

After the first two seasons, prices obtained for association members were fairly in line with average prices obtained by unorganized growers, but because of light receipts and other disadvantages the association decided in 1929 to discontinue its cleaning and shelling operations. A subsidiary corporation was organized under the general corporation law of Virginia to engage only in the sale and storage of peanuts.

The Georgia Peanut Growers' Cooperative Association was organized in 1923 and reached a membership of 8,000 the following year, with an acreage in peanuts of over 150,000 acres. The association first sold its peanuts to shellers, but later arranged with established mills to handle the shelling of its peanuts and began offering shelled goods for sale. One of the chief banes of cooperative associations, incompetent management, overtook this group, and the organization went to pieces.

During 1923 and 1924 several hundred peanut growers in Humphreys County, Tenn., organized to warehouse and sell their peanuts cooperatively. The overhead was taken care of by a deduction of 10 cents a bag. At the close of the season all funds in the treasury were prorated according to the number of bags sold through the association. It was apparently successful, but did not operate more than a few seasons.

The Federal Farm Board took steps, in 1931, toward setting up a national peanut marketing exchange, to be built up through local and regional organizations. Several such groups were organized, including the Alabama-Florida Peanut Growers' Cooperative Association, the Georgia Peanut Growers' Exchange, Inc., the Virginia Peanut Cooperative Marketing Association, and the North Carolina Peanut Growers' Mutual Exchange. These organizations were able to lend their members up to 70 percent of the value of the peanuts, through arrangements made with the Federal Intermediate Credit

Bank. The North Carolina organization operated for only 1 year, but the other three lasted for at least two seasons. The Alabama-Florida Association was especially successful and is reported to have obtained higher returns for its grower-members than were received by nonmembers. The Georgia Exchange, the last of these groups to handle peanuts actively, ceased to function about 1934.

Government Control Measures

Following passage of the acts creating the National Industrial Recovery Administration and Agricultural Adjustment Administration in 1933, the peanut industry came under the operation of measures designed to maintain a balance between production and consumption of peanuts, to bring prices to growers back to the pre-war basis, and to protect the interests of producers, millers, and consumers.

The first of these was the Code of Fair Competition for the Raw Peanut Milling Industry which became effective on January 17, 1934. This code, handled under the National Industrial Recovery Act, prescribed maximum working hours and minimum wages; outlined unfair methods of competition; accepted the United States Standards for grade as the official grades for the industry; provided for paying premiums for peanuts of superior quality and making deductions for peanuts below a certain standard; insisted on the conspicuous posting of prices paid by all millers; and called for a national administrative committee and regional committees to carry out the provisions of the code.

In effect the code was concerned primarily with labor, wage, and mill-operating details; the price and marketing aspects of the industry were outlined in much detail in the Marketing Agreement for Peanut Millers which became effective on January 27, 1934, and which was handled by the Agricultural Adjustment Administration. The agreement, which carried with it a license for peanut millers, established minimum prices for farmers' stock peanuts with variations according to the differences in meat content, quality, and trade preference; included the same provisions for the U. S. Grade Standards, premiums, and deductions as the code; outlined approved methods of sales; and provided for a control board of 10 members.

The minimum prices to be paid to producers by millers were established at $65 a ton delivered for U. S. No. 1 Southeastern and Virginia Spanish, $60 a ton for U. S. No. 3 Class A Virginias and U. S. No. 1 Southwestern Spanish, and $55 a ton for U. S. No. 1 Southeastern Runner peanuts.

This marketing agreement was terminated at the request of the millers as of October 1, 1934. The Peanut Code became inoperative with other codes, following the Supreme Court decision of May 27, 1935 (*36*).

Peanuts were designated a basic agricultural commodity on April 7, 1934 and an adjustment program was announced by the A. A. A. on September 29, 1934. This program was designed to bring the commercial supply of peanuts into line with consumption requirements by diverting part of the 1934 crop into the manufacture of peanut oil or into feed for livestock, and by limiting acreage in 1935 through production adjustment contracts with growers. Under the 1934 diversion

plan approximately 153 million pounds of peanuts were diverted from normal trade channels, chiefly for crushing into oil.

Diversion payments were made both to contracting growers and to oil millers at rates based on the difference between the value of peanuts for oil and the minimum price to growers that the peanut program was designed to establish; namely, $59 a ton delivered for Spanish, $56 a ton delivered for Virginia type, and $50 a ton for Runner peanuts. The rates of payment to oil manufacturers were $16 a ton for Virginia-type peanuts, $12 a ton for Spanish, and $8 a ton for Runner peanuts. Payments direct to farmers for diversion of peanuts to oil were at a rate 25 percent above those figures; but few farmers applied for direct payments.

This program was financed in part by a processing tax of 1 cent a pound, farmers' stock weight, on peanuts except those used in the manufacture of oil, effective October 1, 1934. Conversion factors were established for cleaned and shelled peanuts and for various peanut products. In addition, farmers signing contracts to keep their acreage within the average of the two preceding years, or within 90 percent of the acreage of either year, were eligible to receive from the Department of Agriculture 0.4 cent a pound for the quantities of peanuts harvested in 1934, or not less than $2 per acre of the allotted peanut acreage on a farm covered by the contract. Most commercial producers signed such contracts. The production adjustment program for peanuts was discontinued as a result of the Hoosac Mills decision of the Supreme Court on January 6, 1936, and the processing tax was immediately terminated.

Diversion payments for the 1935–36 season were fixed at $19 a ton for Virginias, $9.50 a ton for Spanish, and $3 a ton for Runners. These payments were subject to the modification that for each 0.1 cent by which the average price of bleachable prime summer yellow refined cottonseed oil at New York City was above 10 cents a pound the diversion payment for peanuts was reduced 50 cents a ton and for each 0.1 cent reduction below 10 cents the diversion payment increased 50 cents a ton. These diversion payment rates tended to establish prices to growers at $60 a ton for Virginia-type peanuts, $62.50 a ton for Spanish, and $52.50 a ton for Runner-type peanuts during the period October 14 to November 15, 1935, and $2.50 a ton higher thereafter. Diversions during the 1935–36 season totaled 73 million pounds of farmers' goods.

Peanut market prices were sufficiently high during the 1936–37 season, by reason of unusually light stocks of vegetable oils, so that no peanut-oil diversion program was in effect.

In 1937 a new diversion plan was placed in operation by the A. A. A. This diversion program authorized regional associations of producers, organized to carry out the program, to pay the following prices for farmers' stock grown in 1937: Virginias U. S. No. 3 or better, Class A $65 a ton; U. S. No. 1 Southeastern Spanish $65 a ton; U. S. No. 1 Runners $57 a ton; U. S. No. 1 Southwestern Spanish $62 a ton. The associations established were the Peanut Stabilization Cooperative, Inc., in North Carolina, the Virginia Peanut Growers' Cooperative, Inc., the GFA Peanut Association in the southeastern section, and the Southwestern Peanut Growers' Association.

These associations bought 1937 crop farmers' stock peanuts directly from producers at the prices mentioned above, and paid for them with money borrowed from the Commodity Credit Corporation. Sight drafts were attached to the warehouse receipts given the grower members of the associations, which were accepted by local banks and finally reached the nearest Federal Reserve Bank, where the peanut association had established an account. When the peanuts bought by the cooperative associations were finally disposed of, either by diversion for crushing into oil or by sale to millers for shelling or cleaning, the difference between the selling price and the payment price plus storage and other charges, including office expenses, was paid for by the A. A. A. A total of 173 million pounds of farmers' stock peanuts was handled by these cooperative associations during the 1937–38 season, of which all but a small percentage was diverted into oil.

A similar diversion or surplus removal program during the 1938–39 season resulted in the crushing of 253 million pounds of peanuts, mostly in the Southeastern States.

During the 1936–37 seasons, growers were offered the opportunity, under the agricultural conservation program, of diverting a portion of their peanut acreage from the production of peanuts to the production of soil-conserving crops at a payment of 1¼ cents a pound on the normal production of the acreage diverted. Provisions having a similar effect, with payments based on compliance with acreage allotments, were included in the 1938 and subsequent programs.

SECONDARY DISTRIBUTION

Operation of Cleaning and Shelling Plants

As the Virginia-type peanuts come from the farm, they are of various sizes, often partly covered with dirt, and with more or less sticks, stones, and other foreign material in the bags. The machinery devised to remove the foreign matter and prepare the peanuts for the market is seldom exactly alike in any two establishments, partly owing to the secrecy that surrounds operations in most peanut plants. A mill may have machines in operation that have not been fully patented, and to prevent the details of such machinery coming to the attention of competitors, visitors are seldom admitted in some factories, though they are not excluded to the same extent as in the early days of the industry. In the better type of factory, much of the machinery is inclosed so far as possible to prevent excess dust but many mills still do not have these dust-eliminating features.

The following description of the shelling and cleaning methods practiced in modern factories in the Virginia-North Carolina territory, written from the observation of representatives of the United States Department of Agriculture, with the assistance of leading Virginia cleaners, shows in a general way how the processes may be accomplished.

CLEANING PROCESSES

Peanuts generally come from the farm sacked in 4-bushel bags. Most cleaners store the farmers' goods in sacks in warehouses or in spaces not occupied by machinery on the floors of their plants; but a

few cleaners have bins for different varieties and different grades of these varieties, in which peanuts are stored in bulk. Outlets under these bins allow the peanuts to drop onto a broad belt which conveys them to the factory, where they are raised by bucket elevators to the top floor of the plant. If the peanuts are stored in sacks, they are raised in bucket elevators to the floor on which the large hoppers are located and there begin the rather complicated journey through the cleaning and shelling machinery.

CLEANING OPERATIONS

From the hopper the peanuts pass into a dirt reel which has small openings to allow dirt to drop through. By rubbing against each other in the reel some of the soil in the little indentations in the hulls of the peanuts is rubbed out and the pods acquire a slight polish. Most factories have a reel or cylinder for removing the sticks and other foreign material from the peanuts. This reel is made from round sheet steel dotted with 1½- to 1¾-inch round perforations. The peanuts readily pass through these perforations and the sticks tail over the end of the cylinder and drop into a bag beneath. As they accumulate the sticks are used for fuel, though at mills in which electricity is used they may be hauled away by nearby farmers.

The next step is to run the peanuts through one or more fans. These blow out lightweight pods, which later go through the shelling machinery, and any remaining sticks and light trash.

STEMMING OPERATIONS

In some mills the next step is the stemming process, to remove little stems that connected the pods to the vines and were not cut off when the vines went through the peanut picker on the farm. The principle somewhat resembles that involved in the ginning of cotton. The preferred type of stemmer employs a cylinder made by stringing iron pulleys on a shaft with a small space between each pulley. Below the cylinder are two or three rows of small saws so spaced on a shaft as to extend up into the spaces between the pulleys. These saws catch the stems of the peanuts and pull them off or cut them up so that a fan can remove them.

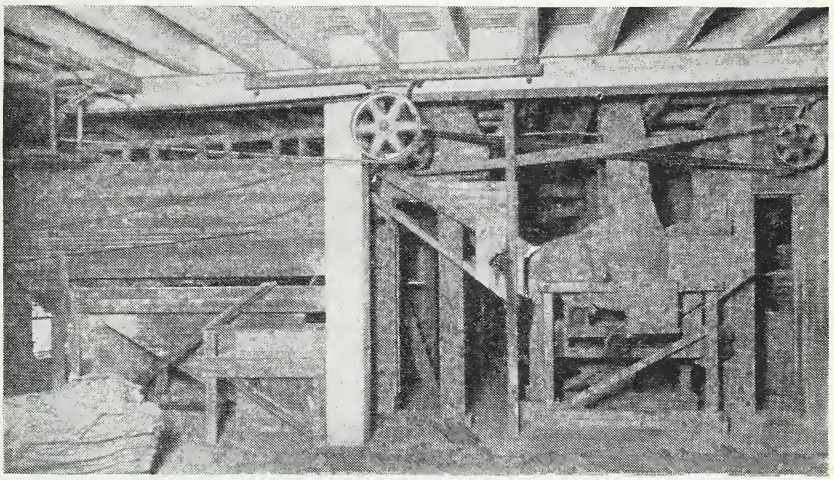
FANNING OPERATIONS

Fans and aspirators are important machines in a cleaning plant, and are used all through the cleaning operations. The more fanning processes the peanuts go through, the less work is left to the laborers at the picking table later. Carefully regulated fans remove the light stems, chaff, empty pods, and other nonedible material. This may be sold to nearby farmers for bedding or hog feed. Lightweight pods, containing shriveled kernels, are later blown from the heavier-weight stock, because jumbo and fancy handpick grades allow only small percentages of them. Some of these blown-out pods may be used in the extra or cheapest grade, of which very few are now sold, but most are shelled.

SEPARATING OR GRADING OPERATIONS

The grading or separating of peanuts in the shell (fig. 13) into various sizes is usually done by the peanuts' passing down a series

of sloping, revolving small cylinders made of metal bars or rods, fastened together. The spaces between these bars are set to make the sizes desired, as the peanuts are forced along the rod graders by gravity and by the pressure of the other pods behind. The first operation is to take out the smallest of the nuts, which are later shelled. In the next step, the second size or fancy nuts fall through slightly wider slotted openings, allowing the larger, or jumbo peanuts to tail over the end of the grader.



BAE 6984

FIGURE 13.—Grader and suction fan used in preparing cleaned peanuts for market. The grader, at left of picture, consists of cylinders of metal rods, fastened together, through which peanuts of definite minimum size fall, allowing larger ones to pass on. Fan, at right, draws out lightweight pods and trash.

POWDERING OPERATIONS

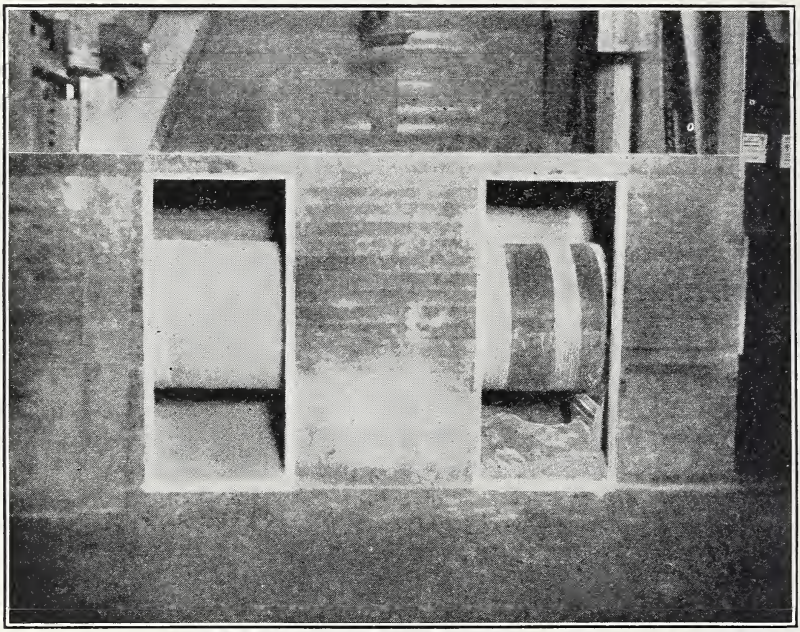
The peanuts in a day's run at any plant may be grown on several widely different soils, and the pods often retain the color of the soil to a slight extent. Further, pods frequently become discolored by exposure to weather. To give them a clean, uniform appearance, the pods are run through polishing drums (fig. 14) containing a fine, white, dustlike powder. Formerly marble dust was frequently used in the drums, but now a form of kaolin or talc is more general. After the pods and powder have tumbled around together, enough powder remains on the hulls to give them a fairly uniform color. Black or discolored spots on the pods are often partially covered by the powder. During recent years a demand has developed for unpowdered peanuts, which is the form in which all peanuts in the shell were sold in the early days of the industry.

HAND-PICKING

Hand-picking is the last step before bagging. The "picking tables" consist of large revolving endless belts. Women (colored women in most mills) are seated along both sides and at the end of the belt, to pick out badly discolored or otherwise defective pods, the best of which

may be used in the extra grade, though most of them are shelled. The final removal of foreign material also takes place at this stage, as upon leaving the picking tables the nuts drop to the floor below for bagging.

Cleaned peanuts are usually sacked in burlap bags 70 inches in circumference by 40 inches high, and cut from cloth weighing 8 ounces to the yard. Nearly all cleaned peanuts are now packed in new bags, on which the brand name and design and the miller's name have been printed by the bag manufacturer. The bags are sewed across the top



BAE 6979

FIGURE 14.—Polishing drum in which peanuts receive a coating of fine, white powder before being graded and sacked. Peanuts enter revolving cylinder at left-hand side of picture and leave at right-hand end. Surplus powder has fallen through wire mesh to floor in right-hand part of picture.

(fig. 15) with strong twine, ears being left on both sides. A bag of jumbo peanuts may weigh from 87 to 90 pounds; whereas most fancys run 100 to 104 pounds to the bag.

SHELLING PROCESSES

VIRGINIA–NORTH CAROLINA SECTION

Shelled Virginia-type peanuts are customarily made from lots of farmers' stock peanuts which as a whole are not considered sufficiently large, uniform, heavy in weight, and bright in appearance to be used in cleaned goods. In fact, the term "shelling stock" is used so widely in the Virginia–North Carolina section to describe peanuts that are too small, too light in weight, or too discolored to sell as Jumbos or Bunch, that it has almost reached the status of an unofficial grade. Pods fanned out because of light weight from the peanuts passing

over the cleaning machinery, and those picked out from the jumbo and fancy grades at the picking tables, are also usually shelled. Cleaners who do not make an extra grade shell the peanuts that would have been used in extras. Some millers do not make any cleaned grade, but shell all their receipts of Virginias. Others turn out jumbo hand-picks only, and shell all other Virginias. All grades of Spanish-type peanuts are shelled, as Spanish peanuts are not sold in the shell.

Shelling operations are neither so numerous nor so complicated as those required to prepare goods in the shell for bagging. Cleaning peanuts that are to be shelled is often limited to running the pods through a dirt reel and a stick machine to remove dirt and other

BAE 6977

FIGURE 15.—Sewing a filled sack of unshelled peanuts—the last step before the peanuts are ready to ship. The peanuts come through the bagging spout from a picking table on the floor above.

foreign material. Shellers of Spanish use a stoner—a shaft in which the peanuts fall into a strong current of air traveling upwards—which lifts the peanuts and light trash, but allows the stones, pieces of metal, and other heavy substances to drop into a receptacle on a lower floor.

The sheller consists of a semicircular iron "basket" 3 or 4 feet long, lined with 1½-inch iron bars of irregular widths, varying from ¼ to ½ of an inch. Revolving within this basket is an iron cylinder 8⅝ inches in diameter to which are attached four beaters of 1-inch-square steel, equidistant from each other, which strike and crack the hulls of the nuts. In some mills the beaters are only ¾- or ⅞-inch square. The pods are fed into the sheller in a continuous stream, and because the spaces between the bars of the basket are of different

widths the pods of varying diameters are cracked without much breakage of the kernels.

The broken pods and the meats that have fallen out are then carried to a shaft in which an upward current of air removes the hulls and light trash. In some plants this nonedible material is blown directly into the firebox in the engine room. Three tons of hulls and other trash are considered equal to one ton of coal as a fuel, and hulls are frequently disposed of in this way. Peanut hulls are a good absorbent, and during recent years there has been a demand by dairy farms and large horse stables for hulls for use in bedding.

The shelled meats fall through the air suction and are separated into several sizes by means of perforated screens. Some plants in Virginia and North Carolina now also use the oscillating series of screens mentioned on page 37 as being in use in some shelling plants in the Southeastern and Southwestern States. An air current blows away most of the small ends of unshelled peanuts, called nubs, that come through the openings in the screen with the extra large, mediums, and No. 1 Virginias, and they go back to the shelling machinery. A few remaining unshelled peanuts, together with badly shriveled, broken, or moldy nuts, are picked out by hand as the whole nuts pass in a thin layer over endless belts or "picking tables" similar to those employed for unshelled peanuts.

The meats then fall over the end of the belt conveyor through spouts to the floor below to be separated by machinery into extra large, mediums, and No. 1 grades, prior to bagging. Formerly the kernels were separated into grades before going over the picking tables, but now in most mills extra large, mediums, and No. 1 nuts pass over the same belt before the kernels are sorted into sizes.

Burlap 40 inches long, 45 inches in circumference, and weighing 10½ ounces to the yard is generally used for the bags. Most millers use new sacks on which their names and addresses and the grade of the peanuts have been printed but brand names and designs are rarely used on bags containing shelled peanuts.

When sacked in 45-inch bags, shelled Virginias average around 111 pounds to the bag for extra large, 114 pounds for mediums, 116 pounds for No. 1, and 111 pounds for No. 2 grade nuts.

Meats screening out as No. 2 grade, when destined for the candy, peanut-butter, or baking trades, also pass over picking tables where discolored, moldy, or otherwise imperfect nuts are removed by hand. Hand picking is unnecessary when the No. 2 meats are going into oil stock. The immature nuts, known as pegs or No. 3, together with screenings and the small, shriveled, broken, and moldy kernels picked from the better grades, are usually sold to oil mills for crushing.

SOUTHEAST AND SOUTHWEST

Shelling plants in the southern tier of States clean peanuts only to prepare them for the sheller, and therefore do not need to size the pods as is done with the Virginia-type peanuts. Accordingly, factories in the South do not handle their peanuts as many times, and less machinery is needed. Yet the procedure of cleaning, shelling, and grading the nuts is rather complicated, and as in the other producing areas is not identical in any two mills.

The peanuts may be stored in warehouses near the shelling plant or in the plant itself, often on the top floor, to which they have been conveyed by bucket elevators moving in an endless chain. After the peanuts have been run through a shaker and fan, which remove much of the dirt and trash, including lightweight or empty pods, they pass through a stoner, in which the stones, being heavier, fall as the peanuts are raised by an aspirator. Often they then pass through another separator to further remove dirt and trash before going to the sheller.

The sheller used in the southern areas is of a different type from that customarily found in Virginia and North Carolina and is more adapted to the smaller Spanish and Runner pods. It consists of a stationary series of corrugated round steel plates, about 3 feet in diameter. Within are whirling circular corrugated plates, similar to the outside plates and 1¼ inches from them. The peanuts are forced through this space and the pods are cracked so thoroughly and carefully that splits are only about 150 to 200 pounds to the ton of farmers' goods.

The kernels are carried on belts to a separator consisting of a series of perforated screens so adjusted in size that peanuts of No. 2 grade and broken pieces of nuts fall through the screens as the nuts of No. 1 grade tail over them. In some plants vacuum devices draw off any shells, sticks, etc., that may have reached this point; in others, fans are employed. The occasional uncracked pods are carried on a belt back to the sheller; and No. 3 peanuts (small kernels or pieces of peanuts unsuited for the No. 2 grade) fall into a bag for crushing later. In some plants small pods removed in the various cleaning processes go back to a "nub sheller." An additional machine (fig. 16) for separating remaining foreign material from the No. 1 grade nuts, by the use of oscillating screens and air currents coming from below, is used in some mills. Baffles, gravity, and the pressure of nuts from behind force the No. 1 grade nuts along as the trash is blown away.

From the screens separate belt conveyors carry the No. 1 and No. 2 size kernels to the picking tables, where undesirable nuts are removed by workers (fig. 17) and placed with the oil stock. Then the nuts tail over the end of the belt into chutes that carry them to the floor below where they are bagged. Some plants have vacuum devices that draw off dust, chaff, and bits of pods just before the nuts reach the picking tables. In a few mills the peanuts go over another separator prior to the bagging, to take out any remaining trash and small particles of nuts.

All Southeastern shellers use a sack that is 40 inches high. Usually it is cut 45 inches in circumference, but occasionally 47 or 48 inches, especially when the miller wants large "ears" on the bags. For shipment by boat some shellers use a 10½-ounce burlap for the sacks, but 10-ounce is the customary weight.

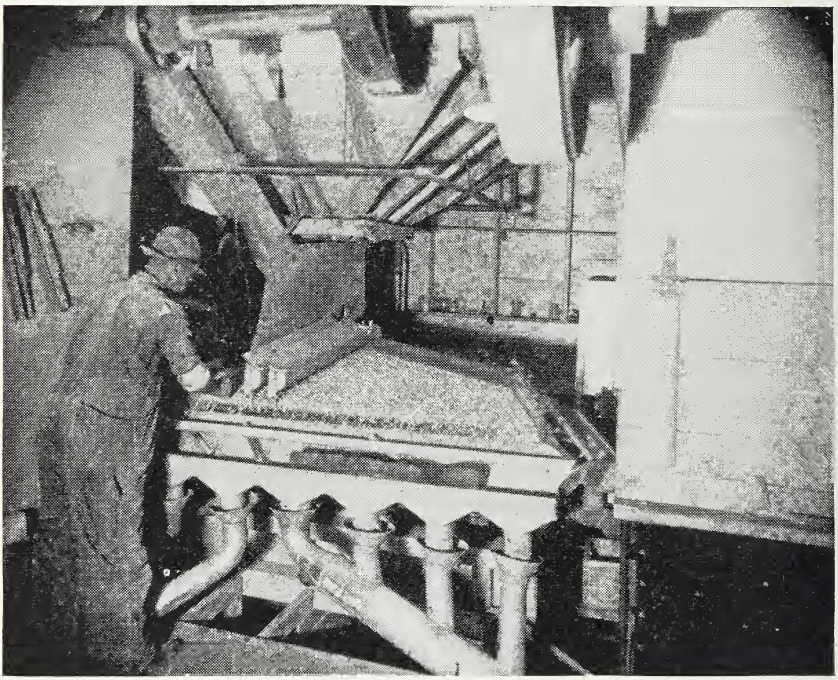
Bags of No. 1 Spanish in the Southeast usually weigh 125 pounds, though occasionally up to 127 pounds. No. 2 Spanish weigh from 115 to 125 pounds a bag. Bags of Runners usually weigh 120 pounds for No. 1, 115 pounds for No. 2 grade.

Oil stock in the South consists mostly of screenings and pick-outs, and is often called "mill stock." During recent years much farmers' stock has been crushed straight, including No. 1 grade nuts.

Runners and Spanish intended for shelling are handled in much the same way. When prices of shelled goods are low, or when peanuts are diverted for oil purposes, a larger proportion of Runners is crushed for oil than of Spanish.

Grades for Shelled and Cleaned Peanuts

Official United States Standards for shelled White Spanish peanuts were first issued in 1921. They were followed by grades for Shelled Runners in 1925; and for Shelled and Cleaned Virginias in 1932. All of these grades have since been revised.[10]



AMS 1187

FIGURE 16.—Oscillating shaker-screen separator used in some mills for removing foreign material from shelled peanuts just before they pass to picking tables. The shelled peanuts fall through a chute at the upper end of the series of screens. Air currents from beneath blow away the trash as the peanut kernels are forced along by baffles, gravity, and the pressure of nuts from behind.

Virginia-type peanuts in the shell are known to the trade as cleaned peanuts and are sold as jumbos, fancys, and extras (though few extras are now made). The chief difference between the jumbos and fancys is in size. Unless otherwise specified the count per pound for U. S. Jumbos shall not average more than 176; whereas the count for U. S. Fancys shall not exceed 225 a pound. The U. S. Extra grade consists of cleaned peanuts which are not suitable for the other two grades. Extras consist principally of nuts which are blown out, screened out, or picked out because of appearance, light weight, or other defects,

[10] See footnote 9, p. 20.

when making jumbos and fancys. They must not average more than 275 a pound, and a 70-inch bag shall not weigh less than 85 pounds. Little demand now exists for extras, and some cleaners do not make them, preferring to shell peanuts of the extra grade.

Shelled Virginia-type peanuts come on the market as extra large, mediums, No. 1's, splits, and No. 2's. According to the U. S. Standards, unless otherwise specified the count for U. S. Extra Large shall not average more than 512 kernels a pound, the count for U. S. Medium shall not average more than 640 a pound, and the count for U. S. No. 1 Virginias cannot average more than 800 a pound.

The tolerances for unsound nuts, splits, and foreign matter for these three grades differ somewhat. U. S. Virginia Splits consist of peanuts which are free from small broken pieces, small shriveled and unshelled, or damaged peanuts. Not less than 90 percent by

AMS 1184

FIGURE 17.—Workers at picking tables in shelling plant in Texas. Damaged or discolored nuts and foreign material are picked out as the peanuts pass along the endless belt. Usually (fig. 44, p. 120) workers sit at both sides of a single wide belt instead of having two narrow belts before them, as in this picture.

weight must be splits. The peanuts in this grade must pass over a $^{20}/_{64}$-inch round-hole screen. U. S. No. 2 peanuts are those that pass through the screens used in making the foregoing grades and consist largely of split, broken, small plump, and slightly shriveled peanuts. Peanuts in this grade must pass over an $^{18}/_{64}$-inch round-hole screen and must consist of at least 25 percent by weight of splits. The tolerances for the U. S. No. 2 grade are more liberal than in the other grades for Virginia-type peanuts. Comparatively few U. S. Split peanuts are sold, as making this grade requires careful and rather expensive grading, for which few plants are satisfactorily equipped.

Chinese peanuts are no longer an important competitor of domestic Virginia-type peanuts, but a few years ago many millions of pounds were brought in each year. Chinese peanuts are of the Virginia type,

and shelled Chinese are sold on the basis of a definite number of kernels to the ounce. Most of the shelled imports have been of the 28 to 30 or 30 to 32 count (28 to 30 or 30 to 32 kernels to the ounce), and thus larger than the peanuts ordinarily packed by shellers in Virginia and North Carolina.

The grades for U. S. No. 2 Shelled Runners and U. S. No. 2 Shelled Spanish are identical except that discolored skins are not considered a defect in Runner peanuts. The chief difference between the grades for U. S. No. 1 Spanish and U. S. No. 1 Runners is that the grade for Spanish requires a smaller percentage of split or broken kernels, and of unshelled or damaged peanuts, than does the grade for U. S. No. 1 Runners.

Actual screening of numerous samples of peanuts, taken from many different shipments, has shown that in years of ordinary crop conditions most merchantable lots of farmers' stock peanuts will meet the United States grade requirements for shelled goods, after going through a well-organized shelling plant. If reasonable care is exercised in operating the shelling and screening machinery, and in picking out undesirable material as the shelled product passes over the picking table, the shellers will have little difficulty in shipping peanuts that come up to the specifications of the Federal grades.

When peanuts are sold "on sample," however, the bars are let down to the movement of off-grade nuts with which it is difficult for a manufacturer to make a creditable edible product. This is especially true when low-grade shelled peanuts are sold on sample. Candy makers or peanut-butter manufacturers using low-grade peanuts can seldom put out a product that will develop repeat business except on a price basis.

Federal grades for shelled and cleaned goods are now used in the contracts of all peanut millers. Disputes between shipper and receiver, which are usually concerned with the quality of the peanuts shipped, are practically always settled on the basis of the Federal peanut grades, as determined by Federal inspection.

Federal Inspection of Shelled and Cleaned Peanuts

Most of the offices of the Federal Food Products Inspection Service are equipped to inspect shelled and cleaned peanuts. In 1939 inspection of commercial shipments of peanuts could be obtained at local Federal inspection offices in Boston, Chicago, Cincinnati, Cleveland, Kansas City, Los Angeles, Milwaukee, Minneapolis, Newark, New York, Norfolk, Philadelphia, Pittsburgh, St. Louis, San Francisco, Seattle, and Washington. Inspection offices in Atlanta, Buffalo, Columbus, Ohio, Detroit, Indianapolis, Jacksonville, Memphis, Omaha, and Portland, Oreg., were equipped to inspect shelled Spanish and shelled Runner peanuts. If the inspector's time permits, he may visit nearby towns to make inspections of peanuts, the expenses to be paid by the applicant. At other markets where Federal inspection offices are located, the local inspector will draw samples of peanuts and forward them to the nearest inspection office equipped with screens and scales for analysis.

Upon request [11] from any person having a financial interest in the shipment, including the shipper, the transportation company or the receiver, a trained Government inspector will make the inspection. Samples of peanuts are taken from enough different bags to enable him to get a number of pounds fairly representative of all the peanuts in the car. The composite sample is carefully analyzed and a certificate is issued showing the results of the analysis and stating whether the lot meets the United States grade requirements. A moderate fee is charged for this service. These Federal inspection certificates are accepted in all United States courts as prima facie evidence of the condition of the goods, and serve as the basis for settling out of court many financial disputes between shipper and receiver.

Settlement of Disputes

The bylaws of both the Virginia-Carolina Peanut Association and the Southeastern Peanut Association—trade organizations which include in their memberships most of the shellers and cleaners in their respective areas—provide for arbitration committees. These committees are empowered to act in the arbitration of disputes arising between members of the associations and buyers who have received shipments of peanuts from members.

In practice, however, such arbitration committees are almost never called together, and have not been since millers have been selling on United States standards for grade. Most disputes between buyer and seller center around the question of the quality of the nuts and whether they meet the grade specified in the contract. When such a contention arises a "Government inspection" is usually called for and the buyer and seller agree to abide by the result of the inspection. Rarely, one or the other will demand an appeal inspection if he objects to the result of the first inspection.

In cases where inspection shows that a car fails to come up to the grade ordered, the buyer will usually take it if an allowance is made in the price. Shippers in the Virginia-North Carolina area can, if they desire, ship another car in case the first one shipped does not come up to grade, but this is rarely done.

The trading rules of the Southeastern Peanut Association, however, provide that shelled peanuts not coming up to contract quality shall be of good delivery if within double the tolerances allowed for foreign material, damaged peanuts, unshelled peanuts, etc.[12] Sharp penalties also are provided, however, in these trading rules for failure to meet the grade specifications called for in the contract, so that it is expensive business for a member of the Southeastern Peanut Association to make shipments falling very far below grade. This is especially true with respect to foreign material, for which the penalty prescribed is a reduction of 14 percent in the contract price for each excess 1 percent in foreign material, regardless of whether the nuts are Spanish or Runners, or of No. 1 or No. 2 grade.

For this reason peanuts, especially if they are of a low quality,

[11] In most cities the Federal inspection office will be found listed in the telephone book under "U. S. Government—Department of Agriculture—Fruit and Vegetable Inspection," or —"Food Products Inspection."

[12] The one exception is that No. 1 shelled Runners, which have a tolerance for split or broken kernels of 3 percent, are not deliverable if the splits in the shipment run more than 5 percent.

are sometimes sold "on sample" by Southeastern shippers. Then the only requirement for good delivery is that the shipment come up to the grade of the sample.

Methods of Disposing of Shelled and Cleaned Peanuts

Peanuts are sold by cleaners and shellers in one of several ways: (1) Direct to the purchaser, either by wire or by long-distance telephone; (2) through a broker at the shipping point or at the city market, both often being employed in one sale; (3) by a representative of a miller located in one of the larger markets; or, more rarely, (4) by a traveling representative of the shipper or receiver. Occasionally city brokers make trips through the peanut belts of the South, and place orders in person for their clients.

Over half the peanut sales in the larger city markets as a whole are made through brokers in those cities who represent the cleaners and shellers. These brokers often carry the accounts of more than one cleaner or sheller, and supply peanut-butter manufacturers, candy concerns, bakery-supply houses, salters, and wholesale grocers, as well as jobbers. The purchases may be made direct from the cleaner or sheller in the South, or through a southern broker who may represent many shelling plants. Most southeastern peanuts are sold through brokers located in Georgia and Alabama cities, but most Virginia-North Carolina peanuts are sold by the millers through brokers in consuming markets rather than through shipping-point brokers.

Thus there is no uniformity in the method of purchase. One broker, two, or none, may figure in the sale. An occasional large shipper in the South often deals with the purchaser direct, claiming to curtail expenses in this way. The brokerage fee is 2 percent and is split between the brokerage firms in the South and at the receiving market if both are involved in a transaction. This fee is paid by the shipper rather than by the receiver. Thus the prices which are quoted to the latter are strictly net.

Formerly the sale of peanuts was largely confined to carlot quantities. Carlots of peanuts usually weigh about 30,000 pounds, except that a carlot of Spanish peanuts shipped from the Southwest usually weighs 36,000 pounds. Prior to 1940, when carlot minimum weights were raised by the railroads, a carlot of shelled Virginias weighed about 28,000 pounds and a carlot of cleaned Virginia-type peanuts in the shell, about 25,000 pounds.

Increased competition, the tendency of many firms to buy on a hand-to-mouth basis, and the increased use of the truck for shipments of peanuts, have caused practically all shippers to accept orders for smaller lots. In Virginia and North Carolina, although the bulk of the peanut business continues to be handled in carlots, small-lot shipments are numerous and constitute a much greater proportion of the total movement than they did a few years ago. Shipments by rail from shelling plants in the Southeastern States are still almost entirely confined to carlot quantities, but truck shipments, which may be for 10,000 to 20,000 pounds or more, are increasingly frequent. Total truck shipments from shellers in the Southwest during some recent seasons have even exceeded shipments by rail, which are usually in carlot quantities.

At times a city broker will obtain several less-than-carlot orders from different firms and combine them so that they can be shipped at the same time in what is known as a "pool car." As carlot freight rates are always cheaper than less-carlot rates, a saving in freight charges is thus effected.

BASIS OF SALE

The time of shipment is always indicated in the contract. Sales of shelled or cleaned Virginias are usually for "prompt shipment"—that is, within 10 days; or, less often, for "immediate shipment," which means within 5 days; or for "quick shipment," which is within 3 days of the date of the order. Some millers in the Virginia-North Carolina area use the phrase "shipment prompt or 30 days" in their sales offers and confirmations.

During much of the year, offers and sales by southeastern shellers are often for prompt, or immediate shipment, or rarely, for quick shipment. Frequently, however, offers will be made for shipment at any time during the following month, or even for half a month, such as "for May shipment"; "for shipment last half March"; or "for shipment last half February, first half March."

In the Southeastern States orders are frequently taken for shipment during specified months which are several months ahead. This is especially true with new-crop peanuts. In the spring, long before the size of the crop is known and even before the first Government estimate of the acreage of peanuts "planted alone" is made, some southeastern shellers will begin offering peanuts for shipment in September, October, November, or December, at prices which are based to some extent on an anticipated average production from the unofficially estimated planted acreage. Orders which are placed as a result of these offers aid the sheller to obtain money from the bank with which to buy farmers' stock, or to contract for it before it has been harvested, and to take care of other expenses. Some large buyers give as a reason for buying cars of peanuts in advance of the season, that it gives them an early basis on which to figure their fall selling prices or the quantity of peanuts they can use in certain candy "pieces" without changing their prices.

Future sales by shellers before the peanuts have been harvested are not now as numerous as they were some years ago, as both shellers and buyers realize that it is safer to wait until something tangible is known about the size of the crop and about other factors surrounding the marketing of the crop, before completing many transactions.

After the new season has started, southeastern shellers make offers for shipment several months ahead, at a slight increase in price over offers for prompt shipment. Although fewer sales for deferred shipment are now consummated than formerly, it is still safe to say that in the Southeast the majority of the cars sold are for shipment from 30 to 90 days ahead.

Millers in the Virginia-North Carolina territory practically never sell futures except that some firms offer new-crop peanuts a few weeks before they are ready for shipment, but after the size of the crop can be fairly well estimated. Future sales of new-crop peanuts by southwestern shellers are not frequent, though occasionally cars are booked for shipment 3 or 4 months ahead.

Most quotations are on an f. o. b. shipping point basis, except that shipments to west-coast points, where the peanuts are trucked from interior points to east-coast ports, may be on an "ex-dock Norfolk," "ex-dock Savannah," or "ex-dock Jacksonville" basis.

Freight charges from points in the same producing area are usually equalized by the millers, if not so provided in the freight tariffs, so that to the buyer all shipping points in the Virginia-North Carolina section, for example, are common rate points.

Brokers in most consuming centers also quote on the basis of f. o. b. shipping point, to which transportation charges must of course be added to determine the delivered price. All-rail shipments from the east-coast to west-coast markets carry higher transportation costs than those which are shipped rail-and-water or truck-and-water.

In some cities brokers have become merchandizing brokers. That is, in addition to handling sales strictly as brokers they also serve as wholesalers, buying for their own account, so that they can make immediate deliveries of rush orders. For this service the broker will endeavor to get for his peanuts a slight premium over quotations prevailing in the South on that day, plus freight charges to his city.

FUTURES TRADING ON NEW YORK PRODUCE EXCHANGE

Trading in shelled peanuts for future delivery on the New York Produce Exchange began in March 1938 following a lengthy investigation as to its desirability. The contract used as a basis of sale at first was 30,000 pounds of U. S. No. 1 shelled Spanish peanuts, freight allowed from southern points to New York City. However, the following additional varieties and grades were tenderable at price differentials: U. S. No. 1 shelled Runners, U. S. extra large Virginia shelled, and U. S. No. 1 Virginia shelled. Later, the basis was confined to two contracts only—one on U. S. No. 1 shelled Spanish peanuts, the other on U. S. No. 1 Virginia shelled. Peanut quotations on the New York Produce Exchange are in cents and one-hundredths of a cent per pound, each point representing one-hundredth of a cent or $3 a contract. Relatively little trading was done on the exchange, and in less than a year the quotations became nominal.

TERMS GOVERNING SALES BY CLEANERS AND SHELLERS

Most sales by millers in Virginia and North Carolina are on "open billing—net cash 10 days from date of shipment" to buyers of approved credit; but sometimes on the basis of "net arrival draft, bill of lading attached, inspection allowed." No discount is allowed on the selling prices of shelled goods, but prices of peanuts in the shell occasionally receive a 1-percent discount for sight-draft shipments.

Occasional shipments from the Southeast move out on "open bills of lading, 10 days net cash" but most of them are shipped on "order notify, arrival draft" billing, with the buyers having the privilege of inspection before paying the draft.

Shellers in the Southwest use "open billing, payment in 10 days, without discount," and "net arrival draft, bill of lading attached, inspection allowed," in about the ratio of 2 to 3.

Where two brokers are involved in the transaction, the original broker makes up the contract papers and shows on them the name of

the connecting broker through whom he works. The seller draws on the buyer direct at the contract price, and the brokerage fee is taken care of by the miller as a separate transaction. As a rule, the broker does not handle any of the documents involved in the sale.

All sales are gross for net, with no tare allowance; that is, the weight of the bags is included in the weight of the peanuts, and peanut prices are paid for the bagging.

Peanuts in City Storages

Peanuts in the shell can be stored for a considerable period of time in the dealers' storerooms or in ordinary dry-storage warehouses, without apparent loss of quality or danger of deteriorating if the hull is unbroken, except that the skin adheres more tightly and the color grows darker. Accordingly, peanuts in the shell are always stored in "common" storage.

Shelled peanuts, however, are subject to "weevil" attack when in ordinary storage, especially during the warm months, and should be kept in cold storage from at least June 1 to late fall. The "weevils" are usually the larvae of the Indian meal moth. They not only cause damage by eating the peanuts, but the frass is objectionable and the larvae spin quantities of silken thread which mats the materials together, thus making them worthless.[13] Shelled peanuts are usually stored at a temperature of 30° to 32° F., although some warehouses carry them at 34° to 36°, or even higher temperatures.

Chicago is the leading cold-storage center for peanuts, though it is far less important than formerly. When imports of Chinese peanuts were heavy hundreds of carloads were sometimes stored in Chicago, and the storage of domestic peanuts also ran into hundreds of carloads. It was not uncommon for 20 million pounds or more of shelled peanuts to be kept in the cold-storage warehouses of Chicago alone by peanut-products manufacturers, merchandising brokers, dealers, and southern shellers, and it is reported that at one time, in 1926, storage holdings of peanuts in Chicago totaled 60 million pounds. By 1938, due not only to decreases in imports but also to changes in marketing methods, Chicago storage houses rarely held over 5 million pounds of peanuts, and at times not over 3 million pounds.

One reason for decreased storage holdings in Chicago, Boston, Cincinnati, St. Louis, Kansas City, and other large consuming centers, is that warehouses in Suffolk, Norfolk, Atlanta, Jacksonville, and other points in or near the peanut-producing areas have become important in storing peanuts. The shipper has more flexibility of shipment when they are stored in the South. Atlanta alone sometimes has 3 or 4 million pounds of shelled peanuts in storage.

Railroads have "storage in transit" rates effective for Atlanta, Jacksonville, Albany, Columbus, Montgomery, Suffolk, Norfolk, and a few other points in the producing areas, as well as for Cincinnati, Chicago, and other points outside the peanut belt. The stop-over charge in 1938 for some of the southern points was 2½ cents a 100 pounds, in addition to the regular transportation rate to the final destination.

Another reason is that peanuts are no longer bought in large blocks at the beginning of the season by manufacturers and merchandizing

[13] For further information concerning the "weevils" and remedial measures for controlling them, see Literature Cited (*3, pp. 40, 41;* and *31*), pp. 120 and 121.

brokers. Firms that formerly purchased 75 to 100 carloads at a time, when the market seemed right, had by 1938 often reduced their purchases at one time to 5 cars or less, preferring to take market conditions as they came, and a purchase of a car or two at a time—and sometimes a pooled car—was the usual procedure with most buyers. Less-carlot purchases had become more common in the Virginia-North Carolina section, and in all the peanut areas truckload shipments were increasingly frequent.

Storages in Los Angeles, San Francisco, and Seattle are important for still another reason. During the warm weather it is inadvisable to ship shelled peanuts from the east coast to the west coast by water, because unless shipped under refrigeration the nuts may heat and become rancid. Storage houses at these far western points make it possible to keep several months' supply of peanuts on hand for local use and for shipment to points several hundred miles away from the west-coast cities.

The storage holdings of local firms at storage centers are often increased by the practice of some shellers of shipping carloads of peanuts to themselves at these points, or to their city brokers, in advance of actual orders. Deliveries are then made as the trade calls for them.

Storage rates vary widely, according to the section of the country. In Chicago, the cold-storage rate for shelled peanuts in 1938 was, for the winter period, November 1 to April 1, 11 cents a 100 pounds for the first month and 6 cents a 100 pounds for each succeeding month. For the summer period, April 1 to November 1, the rates were reduced to 8 cents a 100 pounds for the first month, and 4 cents a 100 pounds for succeeding months. Common-storage warehouses in Chicago charged, in 1938, 7 cents a 100 pounds for the first month and 2½ cents a 100 pounds for succeeding months. Owners of shelled peanuts usually prefer to pay the higher rates, however, and have the benefit and protection of cold-storage facilities.

Because peanuts in the shell occupy more space than shelled goods, their storage rates are higher. In 1938 Chicago storages charged for common storage of peanuts in the shell, 12½ cents a 100-pound bag for the first month and 5½ cents a bag for succeeding months. Storage rates always include all handling charges.

Loans on peanuts stored with them are made by most storage firms, the amount of the advance varying with different storage houses. From 60 to 75 percent of the market value of the peanuts at the time stored will usually be granted, and advances up to 80 to 90 percent of the value have at times been made.

Car Loading and Transportation

The quality of the peanut is not likely to be adversely affected while in transit. Its high oil content insures it against freezing injury in winter, and its composition is such that if of normal moisture content it does not readily deteriorate in warm weather, unless at high temperatures in the hold of a ship where ventilation is not adequate. Thus the use of boxcars instead of refrigerators or ventilated cars is possible and general. Apart from the fact that weevils may increase rapidly in shelled peanuts in the summer, there is no particular need for fast freight, which is another reason why the use of boxcars and

shipment by boat are satisfactory. Early shipments from south Texas are usually made in refrigerator cars with open vents.

Cars of improperly cured new-crop peanuts, which have been shelled and rushed to market too quickly, have been known to heat and mold badly on the way. Shipments by boat from the east-coast to west-coast markets have suffered in the past from heating, and some peanut buyers in the Far West prefer to pay the additional cost of rail shipments from the East, especially in hot weather, rather than risk the damage that may result from shipment by water. Boat lines usually refuse to accept, at their risk, peanuts that have over 8½-percent moisture content for shipment from the eastern producing areas to the west coast. Truck shipments, of course, are rarely subject to the possibility of heating or molding in transit.

No uniformity exists in the method of loading the cars of peanuts. Nearly every shipper seems to have a different way of arranging the sacks in the car. Sacks of shelled peanuts are generally loaded flat. Some shellers place them crosswise of the car, three rows wide, except for two rows between the doors (fig. 18), where they are tied in so as

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FIGURE 18.—One end of freight car in Alabama loaded with shelled Runner peanuts. These bags are ordinarily loaded crosswise of the car two to three layers high and three rows wide except two rows between the doors.

not to slip and uniformly two to three layers high the length of the car.

Other shippers prefer the pyramid style for arranging sacks of shelled peanuts, as this arrangement avoids the possibility of damage to the sacks from any nails that may be protruding through the sides of the car. In this method the bottom layer of bags is laid flat, lengthwise of the car, six rows wide and five rows from each end toward the door. In succeeding layers a sack is placed between each two sacks of the layer beneath, and the number of sacks in each layer is reduced until the fifth layer contains but two rows of bags. The bottom layer of the bags in the doorway is placed two rows lengthwise,

three rows wide, with the sacks on top crosswise and sloping toward the center for added bracing. Some shippers who use the pyramid method of carloading place one or two rows in the center, crosswise of the car.

In other arrangements the sacks may slope from one layer high at the door to five or six layers high in the ends of the car; or they may be stacked in many other ways. Occasionally the sacks are loaded on end, six or seven rows wide, with sacks between the doors two layers high, two or three rows wide, crosswise.

Cleaned peanuts are sometimes loaded five layers high, three sacks wide, runing crosswise of the car. Other shippers load the sacks lengthwise, five sacks wide, four layers high, in the ends of the car, with 50 bags between the doors laid crosswise, three rows wide. In pool cars containing both shelled and unshelled peanuts, the shelled peanuts are loaded in the ends of the car and the peanuts in the shell are placed toward the center of the car.

Most shippers try to load all peanuts away from the car doors as much as possible, in order to avoid the tearing of sacks when the car doors are opened at destination.

Peanuts are usually loaded in boxcars. The doors are generally closed, but the doorways may be boarded up to the height of the load. When shipments are made in ventilated cars, the solid doors are closed,—and often the vents as well, except for early shipments from south Texas points, when they are left open.

Careful shippers take pains to remove protruding nails and cleats on the floor and sides of the car, which may remain from previous loadings, especially near the door. Sacks are often disarranged at and close to the doors, and protruding nails are likely to result in torn sacks, causing damage claims on the part of the receiver. Some careful shippers paper the car floors, and it has been suggested that in cases where the walls are rough it would lessen damage to the sacks to paper the walls also. When car bottoms are damp at the time of loading, peanut shells or burlap may be placed in the bottom of the car to prevent the bottom tier of sacks from molding.

Leading Centers of Production and Shipment

Peanuts are grown throughout all the Southern States but commercial production is chiefly confined to rather limited areas. Cleaning and shelling plants and crushing mills have sprung up where production was heavy, but often farmers' stock peanuts are purchased at a considerable distance from the factory. Sometimes, as with shipments from south Texas to north Texas points, they travel several hundred miles. Although the leading shipping States for shelled and cleaned peanuts coincide in most instances with the leading States of production, the relationship between the production of peanuts picked and threshed and the shipment of shelled and cleaned peanuts varies widely with different States, as will be seen by a comparison of tables 1 and 2. Only States that contain shelling or cleaning plants are given in the comparative tables.

Figure 19 shows graphically the leading areas of production based on statistics in the 1934 census. The sections of heaviest production centered around southeastern Virginia, northeastern North Carolina, southwestern Georgia, and southeastern Alabama.

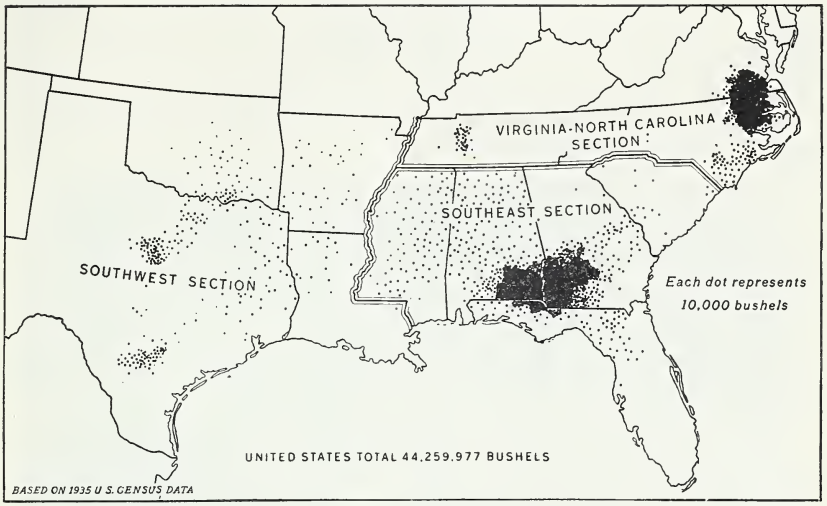

FIGURE 19.—Production of peanuts, 1934. The production centers largely in southeastern Virginia, northeastern North Carolina, southwestern Georgia, and southeastern Alabama, with peanut acreage in Texas widely scattered, and smaller production in other Southern States.

These are also the States that ship cleaned and shelled peanuts most heavily, although not in the same proportions as they produce them. In addition, peanut plants are located in Texas, Florida, Oklahoma, and Tennessee, and during the 1938–39 season small shipments of shelled peanuts were made from shelling plants in Mississippi and California. No shelling plants are to be found at present in Louisiana, Arkansas, and South Carolina, where peanut production is largely on a noncommercial basis.

TABLE 1.—*Peanut production in the leading producing States, 1937 crop*[1]

State	Production	State	Production
	Pounds		*Pounds*
Georgia	375, 180, 000	Florida	42, 000, 000
Alabama	172, 500, 000	Oklahoma	12, 350, 000
North Carolina	308, 700, 000	Tennessee	6, 075, 000
Virginia	184, 975, 000		
Texas	87, 650, 000	Total, 8 States	1, 189, 340, 000

[1] U. S. DEPT. AGR., BUR. AGR. ECON. PEANUTS: REVISED ESTIMATES, ACREAGE, YIELD, PRODUCTION AND DISPOSITION BY STATES AND ESTIMATED COMMERCIAL PRODUCTION BY AREAS 1919–1938. 18 pp. 1939. [Processed.]

TABLE 2.—*Shipments of shelled and cleaned peanuts, from the leading shipping States in terms of unshelled,[1] 1937–38 season[2]*

State	Shipments	State	Shipments
	Pounds		*Pounds*
Georgia	248, 427, 000	Florida	25, 596, 000
Virginia	253, 951, 000	Oklahoma	7, 142, 000
Alabama	64, 541, 000	Tennessee	156, 000
North Carolina	48, 387, 000		
Texas	50, 243, 000	Total, 8 States	698, 443, 000

[1] For Virginia, North Carolina, and Tennessee ⅔ of a pound of shelled peanuts were considered equivalent to 1 pound of unshelled peanuts; for the other States 0.7 of a pound of shelled peanuts were considered equivalent to 1 pound of unshelled peanuts.

[2] The shipping season for peanuts begins about Nov. 1 in the Virginia-North Carolina section, in early September in the Southeastern States, and in late July or early August in the Southwestern States.

An inexact picture of the relationship between production and shipments would be presented if no mention were made of the movement of peanut oil, which has been heavy during some seasons. For the crop year 1937–38, in addition to substantial shipments of refined peanut oil from several mills, 28,680,000 pounds of crude peanut oil were shipped from crushing points in the Southeastern States, 13,920,000 pounds from the Virginia-North Carolina section, and 600,000 pounds from southwestern crushing points.

Peanut shipments from the Southeast move chiefly from points in Georgia; southeastern peanut oil, on the contrary, is shipped largely from mills in Alabama towns. In the Virginia-North Carolina section most shipments of peanut oil as well as of shelled and cleaned peanuts originate in Virginia. Tabulations of the shipments of domestic crude peanut oil for the 1934 crop, by sections of origin and States of destination, appear in table 11 on page 116.

How Peanuts Reach the Consumer

PEANUTS IN THE SHELL

Early in the twentieth century the only way the public came in contact with peanuts was in the shell, and the word "peanut" was associated almost exclusively in most minds with the street vender who had a small, whistling peanut stand, heated by gas or charcoal, where the raw peanuts were roasted slowly and irregularly. Now the small, whistling stand is much less conspicuous and is used more as a place to keep peanuts warm than for roasting. Street venders (fig. 20) or retail grocers, who sell peanuts in 5- and 10-cent bags, now usually buy them from jobbers or wholesale grocers already roasted. A more uniform degree of brownness and an improved flavor are assured by the use of large-scale roasters.

Venders at circuses, fairs, ball games, and summer resorts, as well as street venders and grocers, still sell large quantities of roasted peanuts. The litter caused by purchasers throwing around peanut shells, however, has been considered so undesirable that many cities, some parks, and other places of amusement, have prohibited the sale of peanuts in the shell. This is one of the factors that has contributed to the reduction of the shipments of cleaned peanuts, especially since 1929. During the 1936–37 and 1937–38 seasons, sales of peanuts in

the shall again increased, though even then shipments were less than 80 percent of the quantity that moved during the 10 years preceding 1930.

SHELLED PEANUTS

Shelled peanuts reach the public through a wide variety of channels. The introduction of peanut butter and salted peanuts, some 40 years ago, provided new outlets for peanuts, which have steadily been expanded. Candy manufacturers have found that shelled peanuts can be combined with chocolate, white of egg, marshmallow, and sugar in a wide variety of forms, and new kinds of candy bars in which the

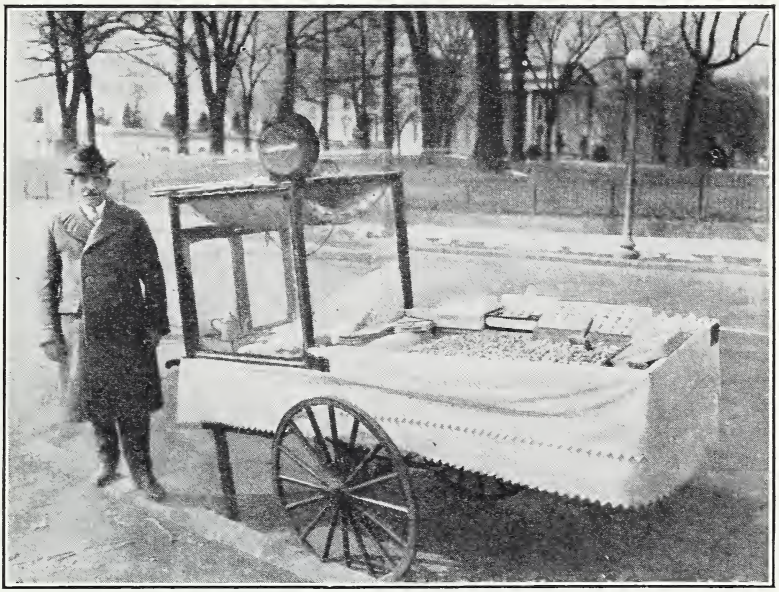

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FIGURE 20.—Street vender selling roasted peanuts. Often, as in this case, peanuts have to meet competition from popcorn, candy, and other products.

peanut is a principal ingredient are constantly placed on the market. These important uses for peanuts are discussed in more detail later. In addition to salters, candy manufacturers, and peanut butter firms, wholesale grocers, large bakers, large retailers, and chain stores, including 5- and 10-cent stores, buy shelled peanuts heavily, through jobbers, brokers, or direct from the South.

PEANUT OIL

Manufacturers of oleomargarine, compounds and vegetable shortenings, salad oil, and other users of vegetable oils have during some years used large quantities of peanuts in the form of peanut oil.

"PEANUT-FED HAMS"

More indirectly, people consume thousands of tons of peanuts in the form of pork derived from hogs fattened on peanuts and peanut fodder. Each year since 1932 over a million acres of peanuts have not been dug and the nuts picked but instead have been hogged-off. Furthermore, during years of low prices or poor quality, hogs are fed many peanuts that would otherwise have been shelled. "Peanut-fed hams" from several sections have obtained a widespread reputation.

Special Methods of Distribution

There are few important articles of food of such high food value as the peanut of which so little is known by the general public. Little attempt has been made to advertise the peanut except in the form of peanut products, or to bring it directly to the attention of the housewife. Many leaders in the peanut industry feel that if the industry is to expand a campaign of education is essential. Various bulletins are available from which the housewife can learn how easily raw peanuts can be prepared for use, and in how many foods and confections they can be employed.[14]

Marketing by parcel post has been tried out in a small way by shippers of Virginia-type peanuts. A circular giving various recipes was often enclosed with the individual lots of peanuts, which usually ranged from 1 to 5 pounds in weight.

For disposing of large quantities of raw peanuts other channels of distribution must be sought. At the present time it is difficult to obtain raw peanuts, and especially raw shelled peanuts, through ordinary retail channels. Experiments have convinced many peanut shellers that there will be little demand for raw shelled peanuts on the part of the housekeeper unless stimulated by advertising.

Both individual shellers and cooperative associations have tried out the sale of raw peanuts in 1-pound cartons or in cellophane bags. Aided by radio and newspaper advertising the sale of raw peanuts was increased locally; but in each case the advertising cost was considered too great to warrant a long sales campaign. Yet leaders in the peanut industry feel that if group advertising could be developed, the consumption of peanuts through distribution of raw shelled peanuts direct to the consumer would be definitely increased.

Even with the benefit of group advertising the sale of raw peanuts in small containers would be aided by special display treatment in the retailer's store, to bring them to the attention of the shopper. The old merchandizing axiom, "Goods well displayed are half sold," should be heeded. The success of the 5- and 10-cent stores in selling large quantities of salted peanuts is due to two factors: (1) Low prices and (2) placing the nuts where the public cannot help seeing them.

In 1938, large eastern millers tried out the plan of selling roasted peanuts in 2-pound cotton-mesh bags, through chain grocery and 5- and 10-cent stores. Window displays and streamers were used to call attention to the nuts, and sales were good.

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[14] For recipes for the use of peanuts in the home, see Literature Cited (*4*, *41*), pp. 120 and 122; or write to the Virginia-Carolina Peanut Association, Suffolk, Va.

Geographical Distribution of Peanuts

Although peanuts are distributed widely over the country, a very large proportion of the domestic production is consumed east of the Mississippi and north of the Ohio Rivers. Figures 21 to 24 show the distribution by States of shelled and cleaned peanuts, by sections and total, for the 1934–35 season. The heaviest user of peanuts is Chicago, the chief manufacturing center for both salted peanuts and peanut butter. New York, Philadelphia, Boston, and Cincinnati followed in rank during the 1934–35 season. Tabulations of the distribution of the 1934–35 crop of peanuts by States and leading cities of destination, are found on pages 115 and 116.

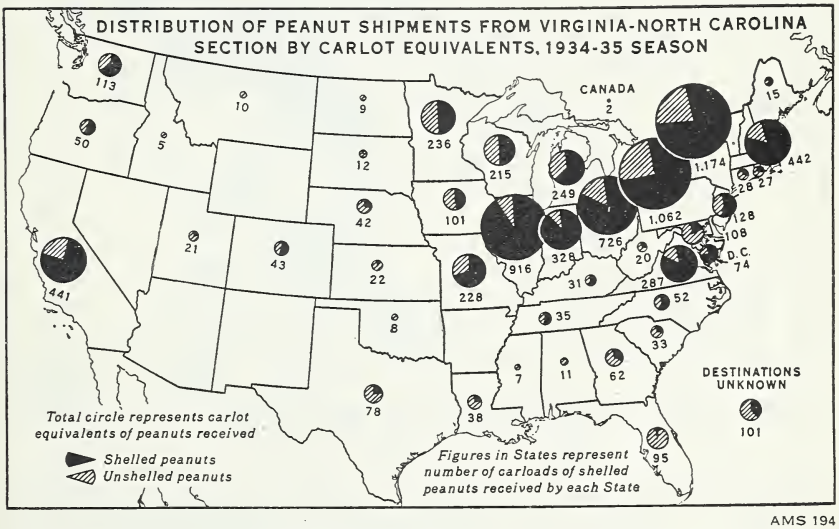

FIGURE 21.—Southern purchasers take a larger proportion of Virginias in the shell than the rest of the country, because for shelled goods they use locally produced Spanish and Runners.

Character of Receipts in Principal Markets

A wide variation is found in the relative proportions of shelled and cleaned peanuts absorbed by the different large cities. Inquiries of leading members of the trade in several large receiving centers by local representatives of the United States Department of Agriculture resulted in the following data, which can be considered as approximately accurate. This survey was made before the addition of the "medium" grade to the United States standards; therefore the percentages do not include any figures for that grade.

BALTIMORE

Relatively more peanuts are received in the shell in Baltimore than in any other large city—90 percent of its total receipts. Of these about 50 percent are jumbos, 40 percent fancys, and 10 percent extras.

Of the shelled receipts, constituting only 10 percent of the total, Virginia extra large represent about 20 percent, No. 1 Virginias 20, No. 2 Virginias 20, No. 1 Spanish 30, and No. 2 Spanish 10. Few manufacturers of importance are found in Baltimore, and 90 percent of the peanut products used in Baltimore are brought in from outside the city.

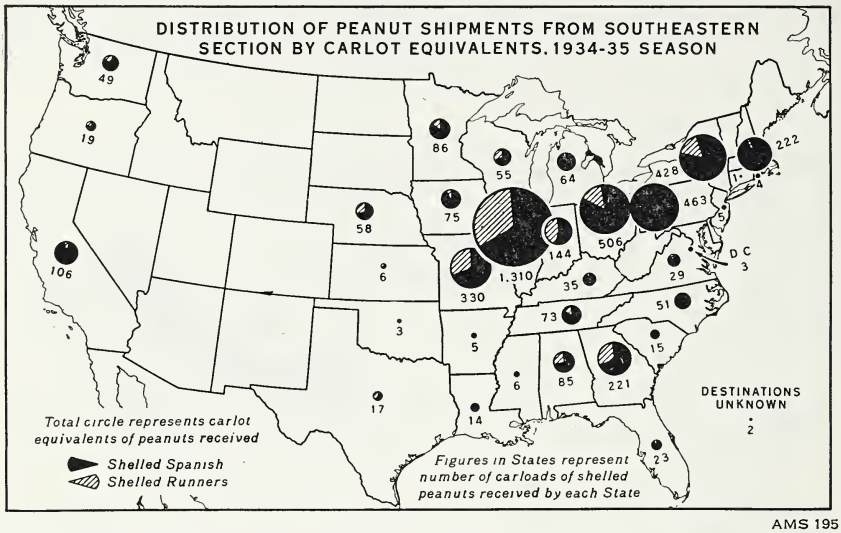

FIGURE 22.—Most southeastern peanuts are shipped to States east of the Mississippi and north of the Ohio Rivers.

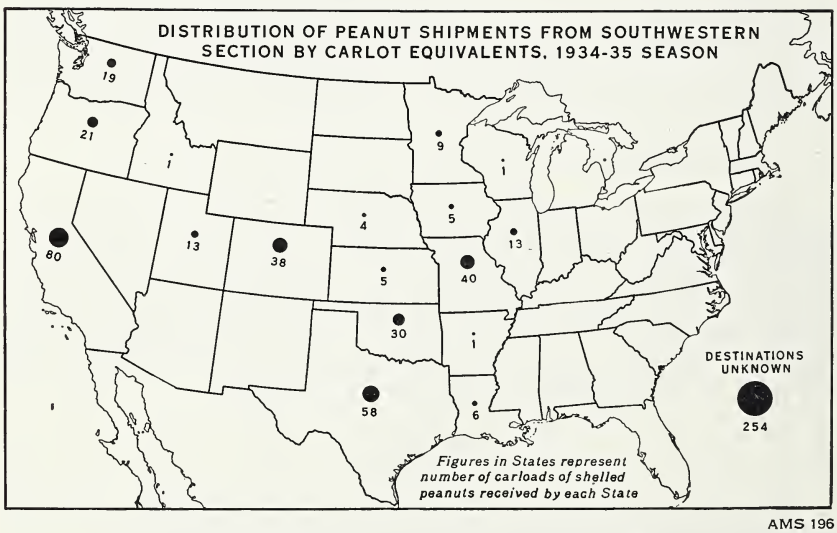

FIGURE 23.—Most of the "unknown" destinations are of truck shipments going to points in or near the States of Texas and Oklahoma.

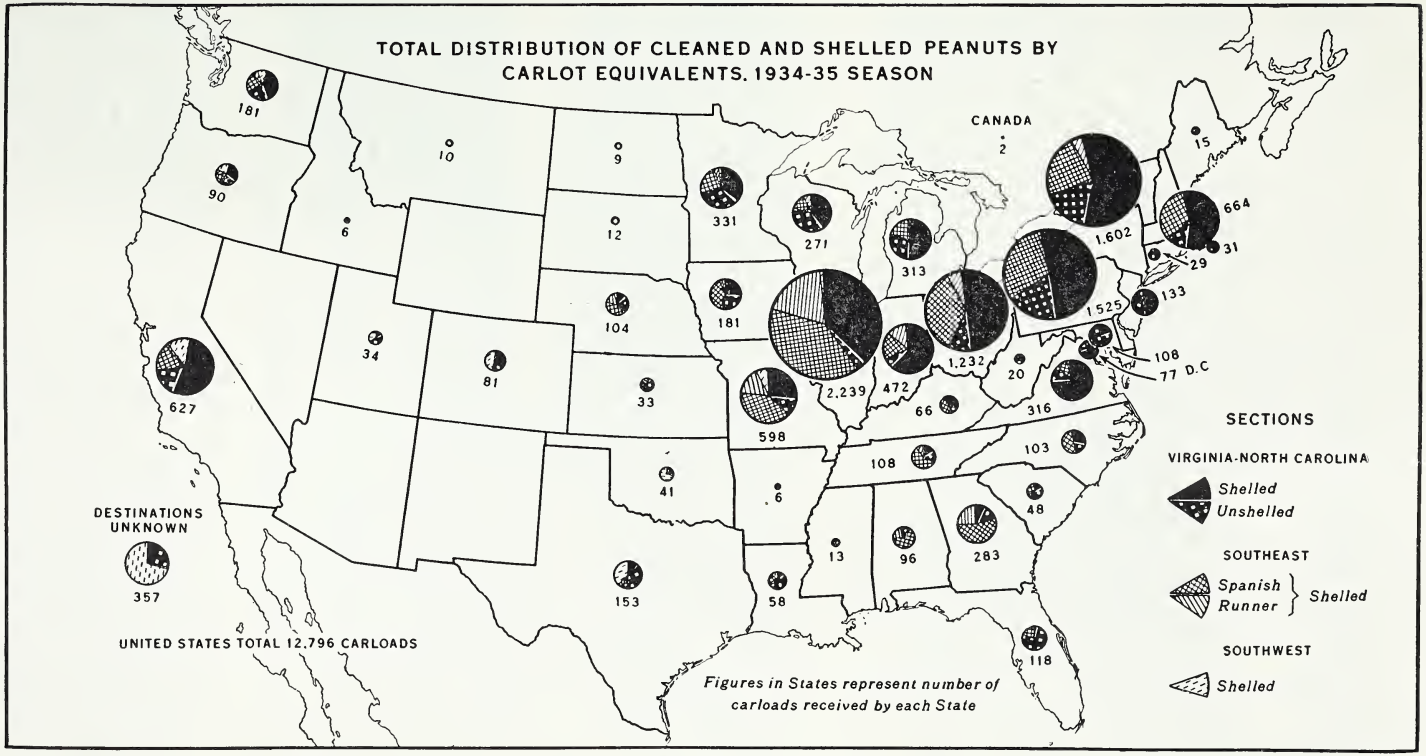

FIGURE 24.—Chicago is the largest user of peanuts of any city in the country, and Illinois leads all States in its total receipts of peanuts.

BOSTON

The percentages of the cleaned and shelled receipts in Boston are exactly the reverse of those at Baltimore. About 10 percent of the peanuts used in Boston are in the shell, and about 90 percent are shelled. For peanuts in the shell Boston is predominantly a jumbo market, with 70 percent of these receipts of the jumbo size; fancys represent 25 percent; and extras 5 percent or less. Of the shelled receipts Virginias total about 40 percent, of which 15 percent are extra large, 20 percent No. 1, and 5 percent No. 2. No. 1 shelled Spanish represent about 30 percent of the shelled arrivals, and No. 1 Runners 20, with No. 2 Spanish and No. 2 Runners 5 percent each.

Candy manufacturers take about one-third of the shelled goods in Boston, and peanut-butter and salted-peanut companies divide the remainder. Butter manufacturers use about 60 percent of Spanish, 30 of Virginias, and 10 of Runners. Practically all the shelled No. 2 peanuts used in Boston go into the manufacture of peanut butter. Peanuts bought by candy makers are divided into about 40 percent of Spanish, 30 of No. 1 Virginias, and 30 of shelled Runners. Few peanuts are used by makers of bakery products. Salters in Boston divide their purchases about equally between Spanish and Virginias, including some No. 1 Virginias as well as the extra large size.

CHICAGO

Unshelled peanuts constitute only 5 percent of the peanut receipts in Chicago. These are divided about equally between jumbo and fancy hand-picks. A summary of the comments of many of the leading manufacturers in Chicago who use shelled peanuts results in the following segregation by varieties and grades, which is important because of the leading position of Chicago in the shelled goods field. Virginia extra large represent only 2 percent of the total shelled receipts, No. 1 Virginias 20, No. 2 Virginias 10; No. 1 Spanish constitute 46 percent, No. 2 Spanish 2 percent; No. 1 Runners are 19 percent of the total, and No. 2 Runners 1 percent.

Chicago is the center of the peanut candy business in the country, and it is therefore not surprising that peanut candy manufacturers take about 60 percent of the shelled peanuts used in Chicago. Peanut-butter makers receive 22, peanut salters 15, and bakers 3 percent. The demand for No. 1 Spanish is heavy, not only from the extensive peanut-candy interests but also from the salters, who use many more No. 1 Spanish than extra large and No. 1 Virginias. Here also most of the No. 2 peanuts go into the making of peanut butter. Most shelled Runners in Chicago are bought by manufacturers of peanut butter, though some confectioners are now using shelled Runners.

CINCINNATI

Cincinnati is a "fancy" market. Only 10 percent of the total volume of peanuts used in Cincinnati are peanuts in the shell, but of these fancys constitute 75 percent and jumbos the remaining 25. Of the shelled peanuts, representing 90 percent of the volume of peanuts used in Cincinnati, Spanish No. 1 contribute 50 percent of the total, No. 2 Spanish 12, No. 1 Runners 12, No. 2 Runners 5, extra large Virginias 4, No. 1 Virginias 15, and No. 2 Virginias 2 percent. Approximately

75 percent of the shelled peanuts used in Cincinnati are manufactured into peanut butter, leaving 10 percent for candy, and 15 for salted peanuts. Bakers in Cincinnati use very few peanuts. Only 10 percent of the No. 2 peanuts are used in making candy, the remaining 90 going into peanut butter.

CLEVELAND

In proportion to its total receipts of peanuts in the shell, Cleveland uses more jumbos than any other large city except Los Angeles. Of the 15 percent of the peanuts coming into Cleveland which are in the shell, about 85 percent are jumbos and 15 percent fancys. Of the 85 percent of the receipts which are shelled, 24 percent are extra large Virginias, 15 are No. 1 Virginias, 53 are No. 1 Spanish, 6 are No. 2 Spanish, about 2 percent are No. 1 Runners, with very few No. 2 Virginias and no No. 2 Runners. Of the No. 1 Spanish, 70 percent are salted, 20 percent go into peanut butter, and 10 percent into candy. Practically all the No. 2 peanuts received are used in making peanut butter. Butter manufacturers take all the Runners. About 85 percent of the shelled Virginias are used for salting, 10 percent in peanut butter, and 5 in peanut candy.

DENVER

Denver is one of the few large cities ranking relatively high in the consumption of peanuts in the shell. Nearly 25 percent of the receipts of peanuts here are in the shell, and practically all of these are jumbos. Almost no No. 2 peanuts are used in Denver and no Southeastern Runners. Most of the Spanish come from Texas. Of the shelled arrivals less than 20 percent are No. 1 Virginias and less than 6 percent extra large Virginias; the remainder are No. 1 Spanish. Peanut-butter makers are the largest users of peanuts in Denver, followed by salters, with few peanuts going into candy.

FORT WORTH

Shelled Spanish represent 95 percent of the peanut receipts at Fort Worth, and of these 75 percent are No. 1 and 25 percent No. 2. Practically all the peanuts in the shell are of the jumbo grade. Almost no shelled Virginias arrive on the Fort Worth market, as peanut-butter manufacturers and candy firms use Spanish only. Some years ago shelled Runners were brought in for making peanut butter, but the butter made more recently of Spanish alone, though having a greater oil content, is said to be satisfactory to the trade.

KANSAS CITY

About 7 percent of the peanuts consumed in Kansas City are in the shell, divided about half and half between fancys and jumbos. No. 1 Spanish represent 28 percent of the shelled receipts, No. 2 Spanish 25, No. 1 Runners 25, No. 1 and No. 2 Virginias 8 each, extra large Virginias and No. 2 Runners 3 percent each. All the shelled Runners and most of the shelled Virginias in Kansas City go into the manufacture of peanut butter, which is the most important single peanut product manufactured in that city. Most of the No. 1 Spanish receipts are salted, whereas many of the Spanish No. 2's go into peanut candy.

Of the entire shelled receipts about 70 percent are used for peanut butter, 25 percent for salting, and 5 for making peanut candy. Virginias in the shell have been replaced largely by salted Spanish. The increased sale of salted peanuts in glass jars is a feature of the Kansas City market.

LOS ANGELES

With peanuts in the shell totaling about 20 percent of its peanut receipts, Los Angeles is a relatively larger consumer of peanuts in the shell than most other cities. Of these 95 percent are jumbos. It is distinctly not a Runner market, the shelled receipts being divided about equally between Virginia-type and Spanish. No 1 Spanish represent nearly one-half of the shelled arrivals, No. 1 Virginias about 40 percent, and extra large Virginias 8 percent, with only small quantities of No. 2 Virginias and No. 2 Spanish. Little peanut candy is manufactured and the salting of peanuts is also relatively unimportant, as 85 percent of all shelled peanuts unloaded in Los Angeles go into peanut butter. Most of the recent heavy receipts of Philippine peanuts have been used in peanut butter. However, salted peanuts are increasing in popularity, partly because of the fact that people are forbidden to litter parks and many other public places with peanut shells. As practically no No. 2 peanuts are used, the quality of the peanut butter manufactured in Los Angeles averages better than that produced in many other places.

NEW YORK CITY

About 18 percent of the peanut receipts in New York City are in the shell. The proportion of unshelled Virginias to the total receipts has been decreasing during recent years, partly as a result of a local ordinance forbidding the sale of peanuts in the shell in public parks or even within a specified area from the parks. Of the receipts of unshelled peanuts only a few extras are now being bought, the remainder being divided rather equally between jumbo and fancy grades. Spanish peanuts constitute about 40 percent of the shelled arrivals; 45 percent are Virginias, and 15 percent Runners. Runners are gaining in popularity as a substitute for No. 1 Virginias, both in peanut butter and in peanut candy, because of the price differential. No. 1 Spanish have also been increasing in popularity, and most New York manufacturers of 5-cent candy bars use No. 1 Spanish peanuts entirely because of their flavor, size, and uniformity. Most of the No. 2 peanuts of all varieties are made into butter, but cheap peanut candy takes a small quantity.

Salted Spanish are increasing in popularity. Nearly half as many No. 1 Virginias are salted as of extra large Virginias. Of the arrivals of shelled Virginias, about 50 percent are No. 1, 40 percent are extra large, and the remainder No. 2 Virginias. No. 1 Spanish outnumber the No. 2 Spanish in volume 7 to 1, and twice as many No. 1 Runners come into the city as of No. 2 Runners. Peanut-butter manufacturers take most of the Runners coming to New York, over 30 percent of the Spanish, and over 20 percent of the Virginias. Candy and salting interests divide the remainder, with a majority of the Spanish going into candy and more Virginias than Spanish being salted.

PHILADELPHIA

The figures given for Philadelphia can be considered as the most accurate of any city, because in preparing the estimates detailed records were obtained of actual purchases by grades from practically all the carlot receivers in the city for the 3-year period 1933–35. Peanuts in the shell represented 24 percent of the total arrivals for these 3 years, with jumbos amounting to 78 percent of the cleaned goods, fancys 18, and extras 4 percent. Of the shelled receipts Runners account for only 2 percent, leaving Spanish and Virginias to share the remainder almost equally, with 50 percent of Spanish peanuts and 48 of Virginia-type.

Philadelphia is another market that receives very few No. 2 grade peanuts, No. 2 Virginias totaling only 7 percent of the shelled receipts and No. 2 Spanish only 2 percent. No. 1 Virginias accounted for 26 percent of the shelled arrivals and extra large Virginias 15 percent. Peanut-butter manufacturers take 67 percent of the No. 1 Virginias arriving in Philadelphia, 92 of the No. 2 Virginias, 25 of the No. 1 Spanish, 67 of the No. 2 Spanish, and more than half of the small volume of Runners. Peanut candy utilizes 23 percent of the No. 1 Virginias, 53 of the No. 1 Spanish, 32 of the No. 2 Spanish, and a few Runners. Most of the extra large Virginias, 20 percent of the No. 1 Spanish, and 8 percent of the No. 1 Virginias are salted. Bakery products take only a relatively small proportion of the various grades and types of peanuts in Philadelphia.

PITTSBURGH

Pittsburgh is another city in which peanuts in the shell are relatively important, about 25 percent of all peanut arrivals being destined for roasting in the shell. Ninety percent of these are jumbos, and the remainder fancys. Of the shelled receipts 50 percent are No. 1 Virginias, 15 percent extra large Virginias, and 35 percent No. 1 Spanish. Very few Runners and almost no No. 2 shelled goods of any variety are used in Pittsburgh. The No. 1 Virginias are divided in use equally between salting and peanut butter, and of the No. 1 Spanish nearly three-fourths are salted, the remainder going into peanut butter. Spanish peanuts from the Virginia-North Carolina area receive a price premium over Spanish peanuts from Georgia or other sections.

PORTLAND, OREG.

About one-eighth of the receipts of peanuts in Portland, Oreg., are in the shell, and of these about 70 percent are fancys and the remainder jumbos. Of the 87½ percent of the peanuts that come to Portland in the shelled form, 3 percent are extra large Virginias, 21 percent are No. 1 Virginias, 8 percent are No. 2 Virginias, 32 percent are No. 1 Spanish, 30 percent are No. 2 Spanish, and the remainder are shelled Runners. Eighty percent of the Spanish receipts, 40 percent of the shelled Virginias, and all the Runners go into the manufacture of peanut butter, in which practically all the No. 2 grade peanuts are utilized. Ten percent of the Spanish receipts and 45 percent of the shelled Virginias are salted, with only small quantities of Virginias and Spanish used by peanut-candy manufacturers and by bakers.

ST. LOUIS

The sale of peanuts in the shell in St. Louis has decreased during recent years and now represents less than 10 percent of the peanut arrivals in that city. Of these about 85 percent are jumbos and 15 percent fancys. St. Louis is one of the few predominant Runner markets, nearly 60 percent of the shelled arrivals being No. 1 Runners, which are used in making peanut butter. Small quantities of No. 2 Spanish and No. 2 Virginias are also used by butter interests. Most of the No. 1 Spanish, totaling nearly 30 percent of the shelled arrivals, and small quantities of extra large and No. 1 shelled Virginias, go into the making of candy. Salting is distinctly a minor industry in St. Louis.

SAN FRANCISCO

Of the peanuts arriving in San Francisco about 25 percent are in the shell and these are divided into 60 percent of jumbos and 40 of fancys. Practically no Runners are received, the shelled goods being divided into about 50 percent of Virginias and 50 of Spanish. Of the Virginias about half are of the No. 1 grade, 40 percent are extra large, and 10 percent No. 2. Of the Spanish, the No. 2 grade also represent about 10 percent of the total, with No. 1 Spanish 90 percent. Nearly all the No. 2 peanuts and more than half of the No. 1 shelled peanuts that arrive at San Francisco are used in making peanut butter. The remainder of the No. 1 shelled goods is divided rather equally between peanut-candy manufacturers and peanut salters. Most of the Philippine imports are used by peanut-butter manufacturers. Salting and the manufacture of peanut candy have decreased during recent years, with peanut-butter production increasing at the same time. Small quantities of both No. 1 and No. 2 shelled goods appear in bakery products.

SEATTLE

Seattle is another market in which the proportion of shelled peanuts in the arrivals has been increasing, as a result of the preference of consumers for salted nuts. Only 10 percent of the receipts are of peanuts in the shell; of these three-quarters are jumbos and one-quarter fancys. Forty percent of the arrivals of shelled goods are of Virginias, 40 percent are Spanish, and the remainder Runners. In more detail, the shelled receipts consist of about 15 percent of extra large Virginias, 20 of No. 1 Virginias, 5 of No. 2 Virginias, 30 of No. 1 Spanish, 10 of No. 2 Spanish, 15 of No. 1 Runners, and 5 percent of No. 2 Runners. Three-quarters of the shelled receipts are used in making peanut butter, 10 percent goes into peanut candy, and the balance is divided between salted peanuts and bakery products, mostly salted peanuts. Peanuts coming from the Philippines are generally used in making peanut butter.

FEDERAL MARKET NEWS REPORTS

The market news reports on peanuts issued weekly by the Agricultural Marketing Service of the United States Department of Agriculture, are well known in all sections of the country where peanuts are grown in any quantity, and in many of the consuming markets.

This service to peanut growers and shippers was established in the fall of 1919 at the earnest solicitation of prominent factors in the peanut industry in Virginia, and has since been greatly expanded and improved. These reports contain news from both producing sections and the leading consuming centers.

Price Quotations

The record of current prices and of conditions prevailing in the three important sections of the peanut belt is based on telegrams received from leading cleaners, shellers, crushers, and brokers in the Virginia-North Carolina section, the Southeast, and the Southwest, giving the prices paid growers for farmers' grade peanuts, and quotations and selling prices f. o. b. shipping points for the shelled or cleaned product. Supplementary information on prevailing prices in the producing areas is obtained from peanut brokers in large consuming centers. F. o. b. prices of crude peanut oil, and of peanut meal are frequently obtained and published. In 16 of the largest city markets, salaried representatives of the Agricultural Marketing Service, without any financial interest in the product involved, get in touch each week with the leading brokers or handlers of peanuts and obtain a record of current prices and market conditions. Composite telegrams covering the situation in each market, including arrivals, are forwarded promptly to Washington to be included in the market news report.

Mimeographed tabulations giving monthly average prices of farmers' stock peanuts in the three important producing areas, and of shelled and cleaned peanuts by varieties or types, f. o. b. shipping points in the three areas, from 1919 to date; and of crude peanut oil and peanut meal, f. o. b. southeastern shipping points, for nearly the same length of time, are available upon request to the Agricultural Marketing Service, United States Department of Agriculture, Washington, D. C.

Reports of Movement

Arrangements were formerly in effect whereby the local agents of the different railroads and boat lines at points in the peanut belt at which cleaning, shelling, or crushing plants are located, reported each week the number of pounds of shelled and unshelled peanuts and peanut oil moving out of their stations. A record of the shipments of shelled and cleaned peanuts by truck was also obtained from shellers in the producing sections, to be added to rail and boat movement. These shipment statistics, which were tabulated and published each week as a part of the peanut news report, form the basis for the tabulated destinations by States on page 115. A graphic summary of the average monthly movement of cleaned and shelled peanuts is seen in figure 25.

Beginning with the crop season 1940–41, all shipment data were tabulated from reports made directly to the Department of Agriculture by peanut cleaners, shellers, and crushers. These reports were intended to represent all original movement or disappearance from the mills, including peanut products consumed in manufacture by the firms processing such products from farmers' stock peanuts, some of which were not included in the previous method of reporting peanut shipments.

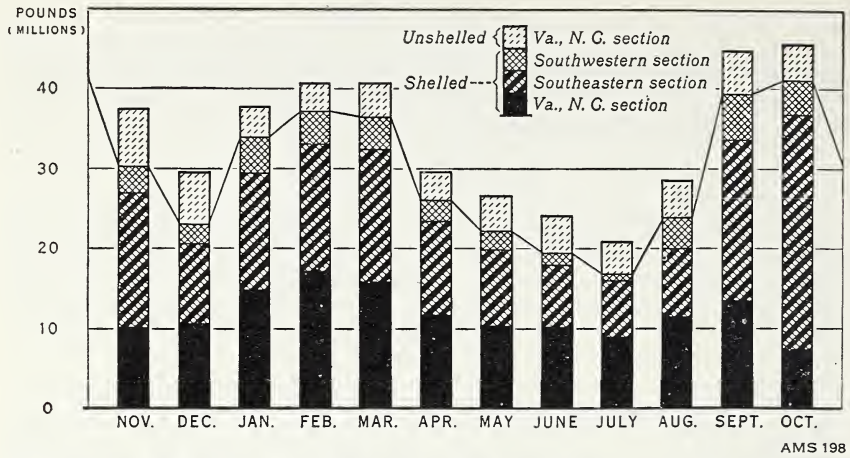

FIGURE 25.—Shipments of cleaned and shelled peanuts, by sections, monthly averages, Nov. 1933–Oct. 1936, rail and motortruck combined. The heaviest movement from the Southeast and Southwest comes shortly after the new crop goes to market; late winter is the most popular time for shipments of shelled Virginias, whereas cleaned Virginias in the shell move in fairly uniform volume throughout the year.

IMPORTS AND EXPORTS

Through the Bureau of Foreign and Domestic Commerce, detailed monthly import and export statistics of peanuts and peanut oil are obtained and published as a part of the peanut market news report. Complete summaries of import and export statistics for both commodities are published at the close of each calendar and fiscal year. Occasional articles dealing with the peanut industry in other countries, as reported by American consular agents, are included.

These weekly market reports are mailed without expense to anyone showing need for them, upon application to the Agricultural Marketing Service, United States Department of Agriculture, Washington, D. C.

CROP-PRODUCTION STATISTICS

Through a system of voluntary crop reporters, supervised by State or district statisticians, a record of the estimated acreage of peanuts harvested for nuts, and of the peanuts produced from this acreage, is obtained for the entire peanut belt. These figures, revised monthly during the later growing and harvesting seasons, are of interest to everyone in the industry as the best available estimate of the quantity of peanuts produced in the United States.

They are published on or about the 10th of the month and subsequently are carried as a part of the weekly peanut market news report. They can be obtained separately from the Agricultural Marketing Service, Washington, D. C. A tabulation covering the acreage, yield per acre, and production of peanuts for the years 1934–39 appears on pages 64 and 65. (Table 3.)

MONTHLY PEANUT STOCKS AND PROCESSING REPORT

The Peanut Statistics Act, approved June 24, 1936, with amendments approved May 12, 1938, directs the Secretary of Agriculture to collect and publish monthly statistics of raw peanuts, shelled and unshelled, and of peanut oil, in the United States, received, processed, shipped, and owned by or in the possession of warehousemen, brokers, cleaners, shellers, dealers, growers, cooperative associations, crushers, salters, manufacturers of peanut products, and owners other than the original producer of peanuts. By 1939 the monthly statistics included reports from more than 1,000 individuals and firms, and represented all important handlers and users of peanuts known by the Department of Agriculture to be operating.

TABLE 3.—*Acreage, yield per acre, and production of peanuts picked and threshed, 1934–39* [1]

State	Acreage [2]						Yield per acre					
	1934	1935	1936	1937	1938	1939	1934	1935	1936	1937	1938	1939
	Acres	*Acres*	*Acres*	*Acres*	*Acres*	*Acres*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
Virginia	142,000	144,000	138,000	151,000	157,000	161,000	1,025	1,050	1,100	1,225	930	1,175
North Carolina	242,000	226,000	232,000	245,000	243,000	255,000	1,075	1,150	1,125	1,260	1,025	1,140
Tennessee	14,000	11,000	9,000	9,000	8,000	8,000	705	625	625	675	775	750
Total Virginia-North Carolina area	398,000	381,000	379,000	405,000	408,000	424,000	1,044	1,097	1,104	1,234	984	1,146
South Carolina	12,000	14,000	12,000	11,000	13,000	16,000	625	680	680	730	600	740
Georgia	471,000	464,000	567,000	507,000	590,000	650,000	615	710	765	740	795	525
Florida	57,000	63,000	72,000	70,000	75,000	85,000	550	610	630	600	750	440
Alabama	240,000	272,000	276,000	230,000	265,000	270,000	650	730	810	750	775	475
Mississippi	39,000	32,000	26,000	24,000	29,000	30,000	560	510	520	520	510	450
Total Southeast area	819,000	845,000	953,000	842,000	972,000	1,051,000	618	701	760	725	775	506
Arkansas	27,000	23,000	18,000	17,000	20,000	20,000	425	500	425	520	460	510
Louisiana	14,000	13,000	14,000	11,000	13,000	13,000	475	440	480	500	500	470
Oklahoma	50,000	40,000	38,000	26,000	35,000	39,000	300	600	270	475	530	400
Texas	180,000	171,000	204,000	199,000	260,000	312,000	305	560	420	440	450	415
Total Southwest area	271,000	247,000	274,000	253,000	328,000	384,000	325	555	403	452	461	420
Total United States	1,488,000	1,473,000	1,606,000	1,500,000	1,708,000	1,859,000	679	779	780	816	764.5	634.5

State	Production					
	1934	1935	1936	1937	1938	1939
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
Virginia	145,550,000	151,200,000	151,800,000	184,975,000	146,010,000	189,175,000
North Carolina	260,150,000	259,900,000	261,000,000	308,700,000	249,075,000	290,700,000
Tennessee	9,870,000	6,875,000	5,625,000	6,075,000	6,200,000	6,000,000
Total Virginia-North Carolina area	415,570,000	417,975,000	418,425,000	499,750,000	401,285,000	485,875,000
South Carolina	7,500,000	9,520,000	8,160,000	8,030,000	7,800,000	11,840,000
Georgia	289,665,000	329,440,000	433,755,000	375,130,000	469,050,000	341,250,000
Florida	31,350,000	38,430,000	45,360,000	42,000,000	56,250,000	37,400,000

Alabama	156,000,000	198,560,000	223,560,000	172,500,000	205,375,000	128,250,000
Mississippi	21,840,000	16,320,000	13,520,000	12,480,000	14,790,000	13,500,000
Total Southeast area	506,355,000	592,270,000	724,355,000	610,190,000	753,265,000	532,240,000
Arkansas	11,475,000	11,500,000	7,650,000	8,840,000	9,200,000	10,200,000
Louisiana	6,650,000	5,720,000	6,720,000	5,500,000	6,500,000	6,110,000
Oklahoma	15,000,000	24,000,000	10,260,000	12,350,000	18,550,000	15,600,000
Texas	54,900,000	95,760,000	85,680,000	87,560,000	117,000,000	129,480,000
Total Southwest area	88,025,000	136,980,000	110,310,000	114,250,000	151,250,000	161,390,000
Total United States	1,009,950,000	1,147,225,000	1,253,090,000	1,224,190,000	1,305,800,000	1,179,505,000

[1] Similar estimates for earlier years are available upon request to the Agricultural Marketing Service, U. S. Department of Agriculture, Washington, D. C.
[2] Represents the acreage picked and threshed. Acreage interplanted with corn or other crops when included in this table is reduced to equivalent solid acres.

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The publication of these reports, by substituting for indefinite trade estimates, actual facts regarding available stocks in the hands of millers and dealers and in warehouses, and with comparative figures for earlier seasons, has aided in stabilizing the peanut market. The monthly stocks and processing report is published about the 15th of each month and subsequently used in the peanut market news reports. It can be obtained upon application to the Agricultural Marketing Service, Washington, D. C.

ROASTED PEANUTS IN THE SHELL

Peanuts in the shell are sold to the public in roasted form. If the peanuts are to have a uniformly brown color they must be turned occasionally during the roasting process. Roasting is usually done in perforated revolving cylinders, similar to those used for roasting coffee, over heat of some kind. Gas is usually employed for the roasting, three burners running underneath the cylinder for its full length but slotted in sections, so that the roasting is made more uniform. Coal is sometimes used, and occasionally electricity is the heating element for small roasters. The number of revolutions of the cylinder varies from 6 to 7 to the minute in a small cylinder holding 10 pounds of peanuts to 40 or 50 a minute in larger outfits holding from 60 to 200 pounds.

The length of time required for roasting peanuts varies with the degree of heat, the moisture content of the pods, the size of the cylinder, and the quantity roasted. With small roasters and only moderate temperature, 45 minutes to an hour is sometimes taken, but with large cylinders and a higher temperature the roasting may be accomplished in 20 minutes or less. Scorching may result if the roasting is hurried too much.

In commercial practice a thermometer is rarely used. The exact time required for roasting is left to the judgment of the operator of the machine. When the kernels have taken on a golden-brown color, the pods are poured out of the roaster for cooling, onto a flat truck, with a perforated bottom if the volume warrants, and are then rebagged. The shrinkage in weight of peanuts in the shell during roasting runs from 7 to 10 percent during most of the year but up to 15 percent early in the season.

Roasters recently placed on the market are equipped with internal heating and have an unperforated, insulated cylinder, which by a series of baffles prevents the nuts from approaching too closely to the gas flames. This type of roaster can also be used for preparing shelled nuts for whole-kernel blanching (see pp. 74 and 76).

One type of small roaster sometimes seen at newsstands and other stores has a cylinder revolving constantly over a sheet of metal that is kept hot by a gas flame beneath. It holds about 10 pounds of peanuts which are pushed around the cylinder by a series of guards or rods that keep the nuts constantly in motion until they are roasted, which takes about 45 minutes.

An electric roaster recently placed on the market for the use of retailers and holding only 4½ pounds of peanuts at a time, saves the operator's time by being automatic in action. A button is pressed when the peanuts are placed in the machine, and when roasted they are automatically dumped. The retailer roasts only enough peanuts

at one time to take care of his current needs and thus avoids the stale stock which is the principal handicap to the increased sale of roasted peanuts.

Automatic thermostatic control is featured in another type of electric roaster, holding 15 to 25 pounds of peanuts, according to the model, and taking about 30 minutes to roast the nuts in an oscillating, revolving chromium cylinder. A cooling tray is provided to which the roasted peanuts are transferred when the automatic control signal indicates that roasting has been completed. Peanuts roasted by infrared radiation are reported to keep fresh longer than when roasted over a gas flame.

Coffee roasters often roast peanuts as a sideline. Some coffee roasters make a practice of keeping 1-, 2-, and 5-pound bags of roasted peanuts constantly on their counters, as well as smaller sacks, to attract the attention of people coming in to buy coffee. Some firms do their own roasting in the front of their stores, so that the pleasing aroma will reach the sidewalk and serve to draw in customers.

In some large cities commercial peanut roasting is concentrated in the hands of a very few firms. In others most of the large wholesalers do their own roasting. The charge for roasting varies widely, from 40 cents to $1 a bag of about 100 pounds, and occasionally even higher. The usual charge in a large city may be expected to be between 50 and 75 cents a bag. In some cases this includes calling for and delivering peanuts, if desired, but occasionally an additional charge is made for this service.

An increasing demand for "unpowdered" peanuts has resulted in cases where the retailer objects to the kaolin or talc used in the cleaning plants to cover most peanuts in the shell, because of the dust that it raises. Coffee roasters, using the same equipment for roasting peanuts as for coffee, are among the leading buyers of unpowdered peanuts. Unpowdered peanuts sometimes sell for a slight premium over powdered goods.

There is a considerable demand on the part of street venders and small storekeepers for roasted peanuts in bags smaller than full-sized sacks. Paper bags holding 5 or 10 pounds of roasted peanuts have a large sale in some cities; other dealers market roasted stock in bags containing 20 to 50 pounds. The retailers resack the peanuts into small paper bags and sell them for 5 or 10 cents. Sometimes large roasters furnish the retailer with paper bags on which the roaster's name and address are printed. If the peanuts are kept hot in the retailer's store, or at least warm, they will sell more readily.

Increasing interest has recently developed in the use of cotton-mesh bags holding 2 pounds of roasted peanuts, which have been sold as leaders by chain stores and 5- and 10-cent stores. When kept fresh-roasted, the attractive aroma of roasted peanuts in the shell has proved a big selling feature.

Several experiments have been made with a view to preparing roasted salted peanuts in the shell, and at least one patent has been granted which involves forcing a saline solution under pressure through the pores of the peanut shell. The peanuts are then subjected to heat to evaporate the liquid within the shells, and the nuts are roasted in the usual manner. The finished products have been placed on the market in a limited way, but there seems to be little interest in peanuts salted in the shell except as a novelty.

PEANUT PRODUCTS

For many years peanuts reached the consuming public only in the form of roasted nuts in the shell, or, in parts of the South, as "boiled peanuts," that is, peanuts that are boiled in the pods until the kernels become soft. The introduction, 40 years ago, of the penny vending machine for salted shelled Spanish peanuts, which had been sold on railroad trains since the early nineties, gave an impetus to the salting industry. Peanut butter was developed as a food for sanitarium use about 1890; and soon afterwards was placed on the market for sale through regular grocery channels. Early peanut-butter manufacturers used meat grinders to make the product and hand-operated sausage-stuffing machines to fill the glass jars.

As special machinery for making peanut butter was invented and came into general use, production gradually expanded, until now more peanuts reach the market in the form of butter than in any other way. A great increase in the use of peanuts in candies came with the development of the candy-bar business in the 1920's. As all these uses for shelled peanuts increased in popularity, the relative shipments of shelled goods also increased, until during the past few seasons shipments of shelled raw peanuts from the South have been, on the basis of farmers' stock, six to eight times those of cleaned peanuts in the shell.

If to the raw shelled domestic peanuts used outside the peanut belt are added the shelled stocks used by peanut-products manufacturers in the South, and if all are reduced to unshelled equivalents, it is probable that the total weight of the farmers' stock peanuts used in the shelled form in the country will be found to be more than 10 times the weight of the peanuts consumed in the shell.

Salted Peanuts

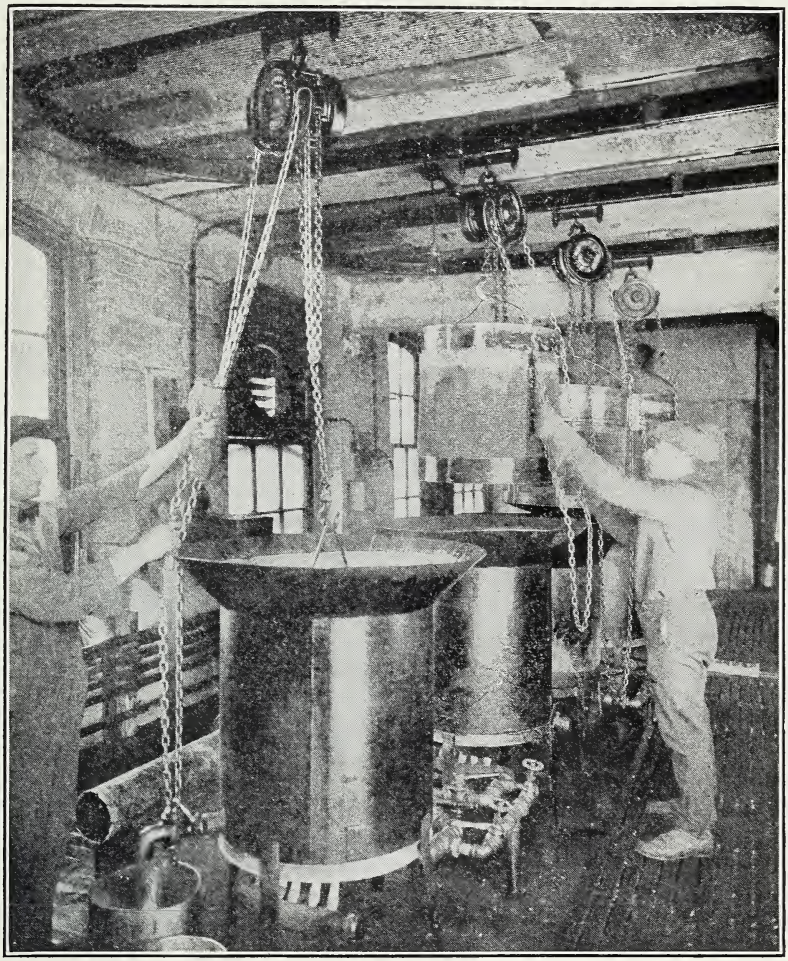
Salters have long been among the largest purchasers of peanuts. At times salting interests have bought more peanuts than any other one group of users, and even during recent years purchases by salters have been exceeded only by those of peanut-butter manufacturers. Enormous quantities of domestic Spanish and Virginias are salted, and salters were among the heaviest buyers of imported peanuts from China a few years ago when foreign peanuts were arriving in large volume.

SALTED SPANISH

Spanish peanuts are customarily salted without removing the thin brown skins. Foreign material is first removed from the nuts. Usually they pass along an endless belt, enabling workers on either side to detect stones, moldy or otherwise undesirable peanuts, or other materials. In numerous factories a stoner, employing suction, is also used to remove the stones or other heavy foreign matter before the peanuts pass to the picking tables, and sometimes suction pipes placed close to the tables draw off dust and bits of skin. The nuts are then cooked in oil, in an iron kettle or in a peanut cooker. One form of cooker, containing a woven-steel, colanderlike basket equipped with a bail and hoisting device, is shown in figure 26.

The cooking medium is a vegetable oil of some kind, generally coconut oil, which is the least subject to rancidity of any oil in common use, though babassu oil has been used, and occasionally peanut oil and other oils.

The oil is usually filtered through cheesecloth once a week or oftener, and should be changed completely before it becomes rancid. The spent



BAE 6991

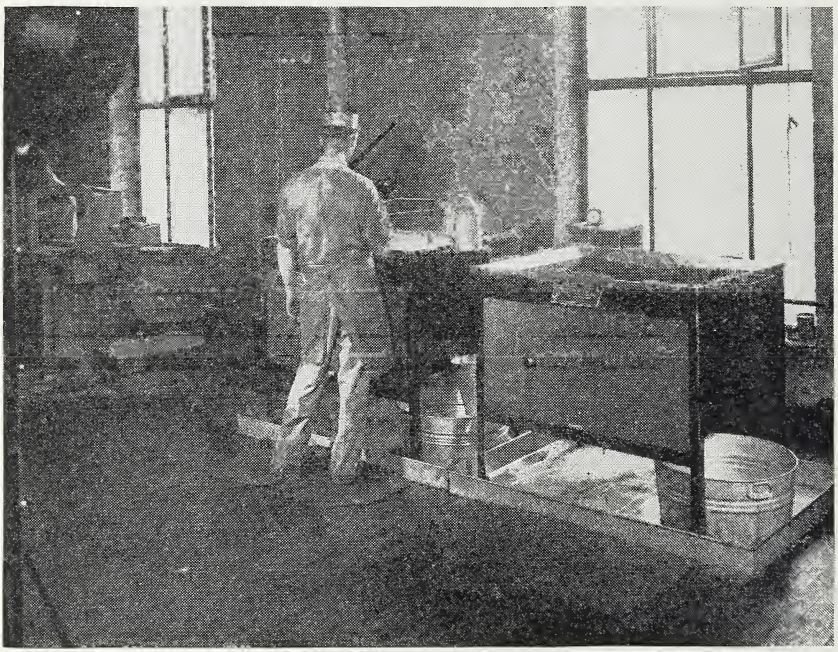
FIGURE 26.—Cooking extra large shelled Virginia-type peanuts in vegetable oil preparatory to salting.

oil is as a rule sold to soap manufacturers, and the material strained from the oil can be used for cattle feed or crushed for oil.

Reports from prominent salters indicate that there is no uniformity in the temperature of the oil used in heating the kernels. As the temperature determines the length of time the nuts must stay in the oil, the cooking period necessarily varies considerably in different salting

plants. When using the older type of cooker, some salters bring the temperature of the oil up to 350° F. before putting in the first batch of peanuts. Dropping 150 pounds of cold nuts into the oil normally reduces the temperature to from 275° to 288°. It is still hot enough, however, to drive out most of the moisture from the peanuts. From this point the temperature gradually rises and by the time it reaches about 325° the peanuts have acquired a light-brown color. During the cooking the operator stirs the nuts occasionally. About 13 to 15 minutes are required to cook a 150-pound batch at the temperature ranges just given. Other salters, using oil heated to lower temperatures, require up to 25 minutes or more to cook the kernels. In a few plants the peanuts are not all poured into the oil at one time but are delivered into the cooker in a continuous stream sufficiently small not to cool the oil appreciably, and the kernels are cooked more quickly for that reason.

Most peanut cookers are heated by gas, but some of the newer plants use electricity. In one electric cooker (fig. 27) 100 pounds of



BAE 30257

FIGURE 27.—Electric peanut cooker, in which temperatures are controlled thermostatically. These cookers hold about 100 pounds of nuts. An empty machine is seen at the right of the one before which operator is standing.

Spanish peanuts are cooked at one time from 18 to 25 minutes at a temperature of 325° F., or the same-sized batch of Virginia-type peanuts is cooked from 15 to 16 minutes at 310°. The temperature of the electric cooker is controlled thermostatically.

Thermostatic control is also used with the latest type of gas-heated peanut cooker. Although this type of cooker holds only 390 pounds of cooking oil, and some concerns cook only 165 pounds of peanuts

at a time, it can handle batches up to 200 pounds in weight. The heating tubes into which the gas is blown extend into the oil the full width of the cooker, with their tops about 6 inches above the bottom of the cooker. About eight tubes are sufficient for a cooker holding two drums of oil.

When thermostatic control is used the temperature of the oil fluctuates less than in cookers not so equipped. In one plant in which 200-pound batches are cooked at a time in thermostatic-controlled gas heaters, the temperature drops only from the initial 360° F. to 325° when the peanuts are poured in. Cooking is completed in about 16 minutes.

Salters state that if the quality of the peanuts cooked is good and they are not mealy, very little sludge is formed. Meal on peanuts breaks down the oil rapidly, but with salted Spanish it is found only when blanched nuts are used, and then primarily when the blancher was of the brush type.

When the nuts reach the proper color they are promptly lifted out of the cooker, and the oil is drained off before salting. In smaller plants the salt is shaken over the nuts with a sieve or it is sprinkled on by hand, and then the peanuts are stirred or raked so that the salt is evenly distributed. Some manufacturers prefer to apply the salt before cooling the peanuts; others reverse the process. The proportions used by various salters range from 1 pound to 2½ pounds of salt to 100 pounds of peanuts. Peanuts which are cooled immediately are often sprayed lightly with cottonseed oil before salting, or occasionally with glucose or gum arabic and water, so that the salt will stick better and to give the peanuts a glossy appearance. In some plants cold oil is sprinkled lightly on the peanuts after they have been salted, not only to make the salt stick better but to give the kernels a crisp appearance.

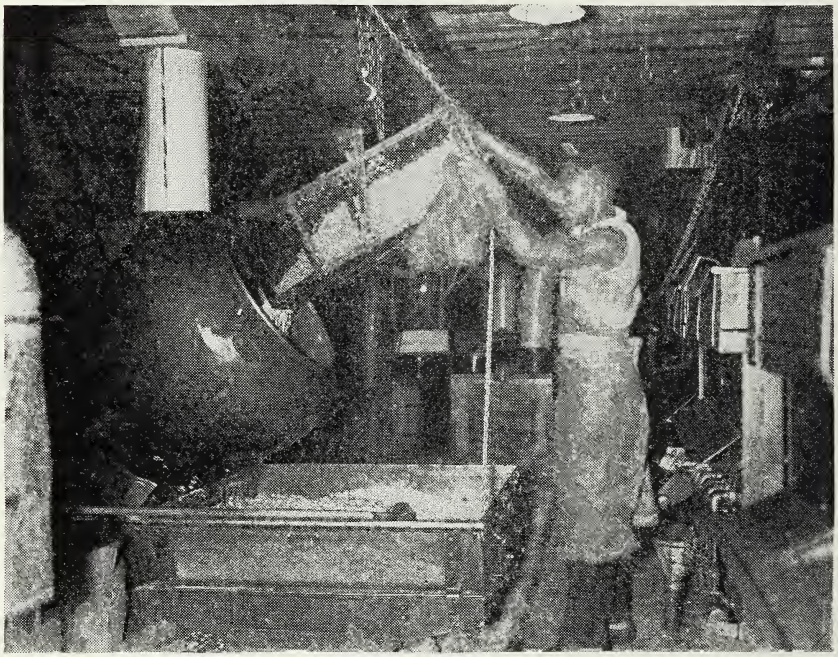
In large salting plants the peanuts, after being cooked in large vats of oil, are suspended above these vats, still in the wire baskets in which they were cooked, to drain. Then the baskets are shifted by overhead pulleys and the peanuts poured into huge drums (fig. 28), holding in some cases 150 to 200 pounds of peanuts. Salt is added and the drums revolve until the salt and peanuts have been thoroughly mixed, whereupon the peanuts are emptied into wire hoppers on wheels, from which they are poured into chutes leading to conveyors which carry the peanuts to the packaging room.

When only 100 pounds of peanuts are salted at one time, a small cooling table, such as seen in figure 29, is sometimes used before the nuts are salted. Here the cooling is accomplished in less than 5 minutes by means of air drawn through the nuts by suction fans placed under the table.

Salted Spanish peanuts are sold in various ways. Many of them reach the consumer in small sacks, usually of glassine or cellophane, which retail for 5 cents. When peanuts were cheap, penny sacks of salted Spanish peanuts have been sold by several manufacturers. Passenger trains, railroad stations, drug stores, and delicatessen stores furnish a considerable outlet for these goods. In some instances the firms selling the sacked salted peanuts are not equipped to do their own salting, and they purchase the finished product from salters, often in boxes having a paraffined-paper lining.

Many large salters use automatic nut-bagging machinery for filling the sacks with peanuts (fig. 30); smaller firms fill the envelopes by hand, using a cup to measure the quantity going into each sack. Market prices of peanuts determine the quantity of peanuts going into the envelope sacks. In 1938, 5-cent bags of salted Spanish weighed about 3 ounces and bags of salted Virginias about 2. The automatic weighing device of the filling machine can be adjusted easily when changing price levels necessitate a change in the weight of the peanuts in the sacks. Cellophane containers holding 1 pound have also proved popular for salted peanuts of both the Spanish and the Virginia types.

Perhaps the largest outlet for bulk salted Spanish is through 5- and 10-cent stores and other stores that use them as "leaders." A certain



AMS 1145

FIGURE 28.—Cooked peanuts being poured into revolving drums in which salt is mixed with the nuts. They are then poured into the wire hopper seen in lower center, for conveying to packaging machines.

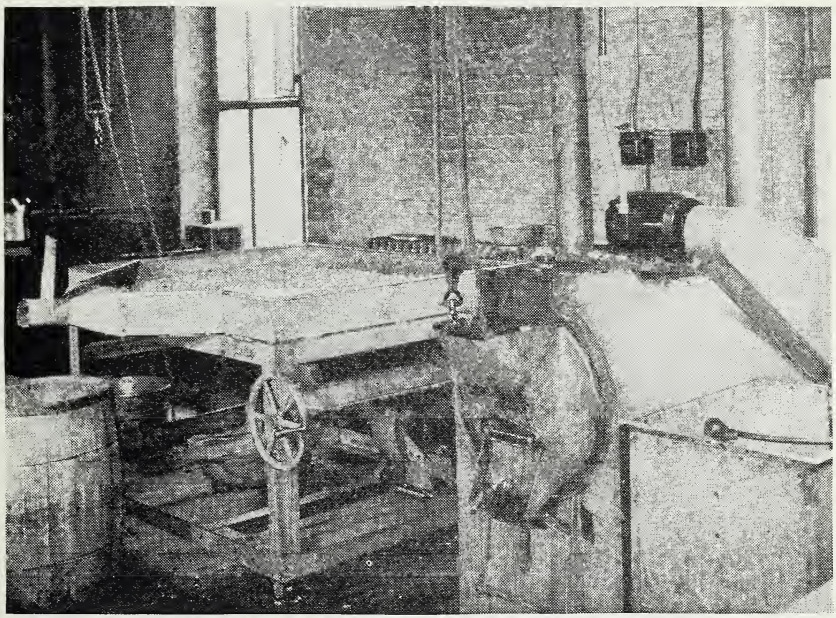
number of ounces of peanuts may be sold for 10 cents, or the peanuts may be sold at so much a pound. Formerly these bulk salted peanuts were principally shipped in barrels; now they are packed mostly in 30-pound corrugated boxes having paraffined or parchment liners.

Several southern concerns pack blanched salted Spanish (peanuts with the skins removed, salted), principally in glassine or cellophane bags prepared in much the same way as are salted Virginias, described on pages 73 to 77. They have a wide sale in some parts of the South. Salted split Runners have occasionally been sold by 10-cent

stores in the Southeastern States but they have not appeared elsewhere.

VENDING MACHINES

In some cities large quantities of salted Spanish peanuts are disposed of through penny-in-the-slot vending machines. Though they are not as popular as before the introduction of the small sacks of salted peanuts, the machines are still widely distributed throughout the United States. They are often lent to merchants, drug stores, city transportation systems, and others on a plan that allows the owner a certain percentage of the sale as a commission in place of rent. Though they operate chiefly with Spanish peanuts, vending machines in which the mechanism is adapted to the irregular size and shape of the Virginia-type peanuts have recently been placed on the market.



BAE 30256

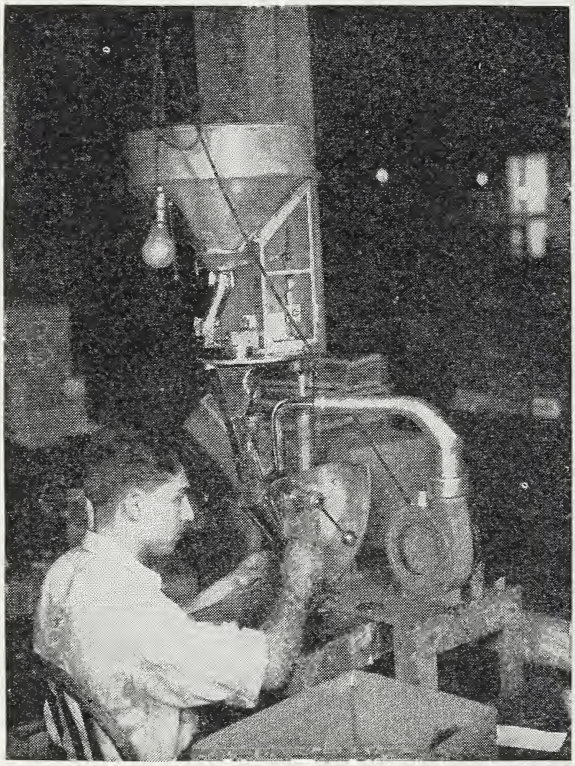
FIGURE 29.—Cooling table for small batches of salted peanuts. Air is drawn through the nuts by suction fans placed beneath the table. Machine at right is a gas-fired roaster for shelled peanuts, with heat automatically controlled. Nuts are placed in cylinder and rotated while roasting.

SALTED VIRGINIA PEANUTS

Salting of Virginia-type peanuts began after the introduction of salted Spanish, but the industry has long since become firmly established. Many large factories have been erected, especially equipped to handle the salting of large-size nuts, and aided by extensive advertising a lively demand has been developed for the product.

In the earlier days of the industry only the large size Virginia-type peanuts, running 30 to 32 to the ounce, were salted, but later some

firms found a demand for salted No. 1 Virginias, at of course a lower price than for salted extra large or "jumbo salted;" and a good demand is now being experienced for salted "mediums," a new grade established in 1939. After being cleaned, the kernels are roasted enough to shrink the meat slightly and loosen the red skin (fig. 31) so that the thin skins can be removed, either by hand or with blanching machinery. When gas-fired cylindrical roasters holding 100 pounds of peanuts are used, the roasting can be accomplished in about 20 minutes at 280° F., but with the large roasters in which 500 pounds of peanuts are placed at one time, manufacturers prefer to allow as

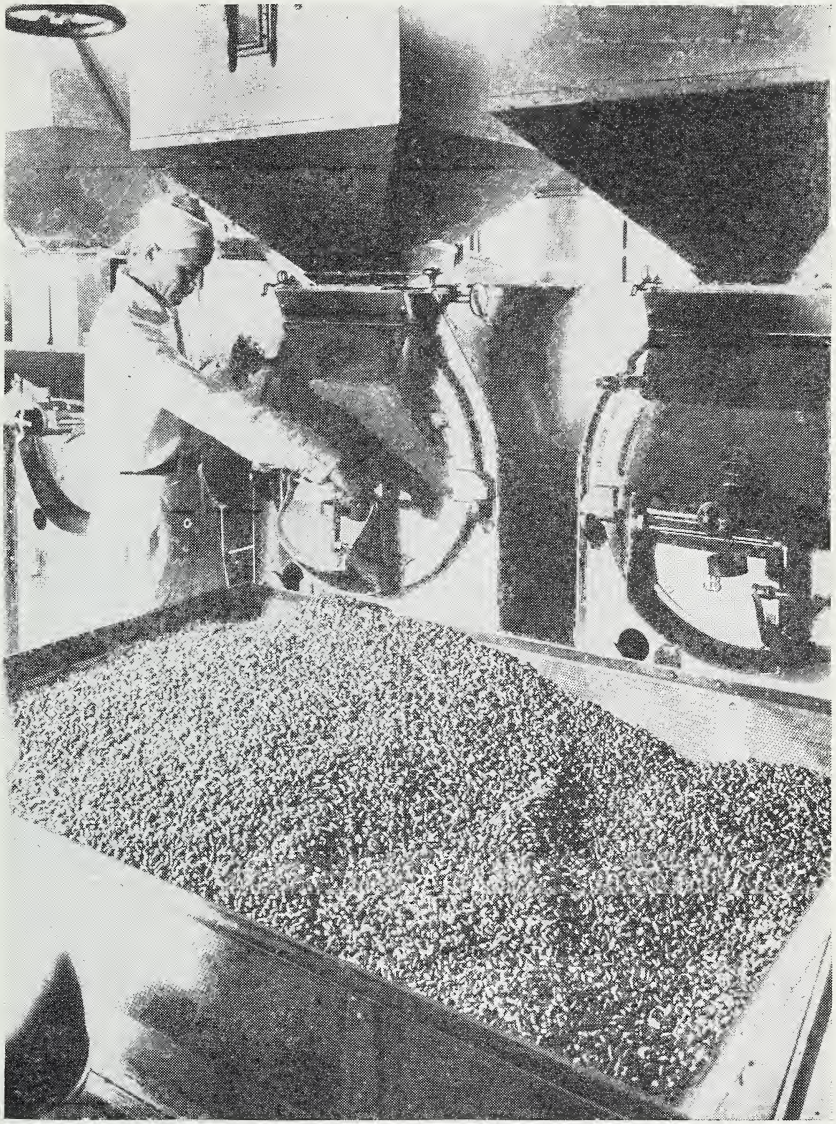


BAE 30255

FIGURE 30.—Nut-bagging machine in peanut-salting plant. The quantity going into the bag is controlled by an automatic weighing device, which may be adjusted when changing peanut prices warrant.

much as from 30 to 40 minutes, as slow roasting brings out the flavor better.

Two types of blanchers are used. The blancher formerly in general use consisted essentially of a box containing a series of fine brushes running on pulleys and revolving in opposite directions. The peanuts were poured into the top, the brushes removed the skins with little splitting of the kernels, and the nuts emerged onto a pick-



BAE 30201

FIGURE 31.—Shelled Virginia-type peanuts being dumped from large-cylinder roaster to steel holding tank, with perforated sides, where they can cool. A smaller roaster for shelled Virginias is seen in figure 29.

ing table, (fig. 32) where foreign matter was removed. Dust and skins not already blown away by an upward current of air in the blancher were drawn off by a suction pipe. The skins were saved and sold for crushing or for stock feed.

In the newest type of whole-nut blancher the brushes are replaced by two roller belts made of thick rubber which are ribbed with a series of transverse grooves, and which move close together but in opposite directions. The peanuts are fed into the space between the belts, and as they roll over and over the skins are brushed off as with the fingers. In one type of machine, as the peanuts fall onto an endless belt a suction pipe draws off skins and lightweight foreign

AMS 1148

FIGURE 32.—Picking tables in peanut-salting plant. As peanuts pass along endless belt, operators pick out any apparent defective nuts, stones, bits of skins, etc.; then nuts pass under a suction pipe that draws off chaff and dust. A cylindrical screen separates whole nuts from splits, and operator in front center gives final inspection for split or defective kernels.

material, a worker removes skins which were not loosened by the rollers, and a second suction pipe carries them away. The nuts pass from the belt to a screen that may be cylindrical, or flat and oscillating, and that separates the whole nuts from the halves or broken nuts. Salters report that the use of this type of blancher lessens the number of splits and reduces the quantity of meal on the blanched nuts.

In a few modern factories the peanuts pass before an electric eye after leaving the blancher. Sensitive to color, the electric eye passes only white peanuts, catching discolored kernels, stones, or other foreign matter. Finally the kernels pass along an endless belt, where

they are hand-picked by women who give them a final inspection and remove any undesirable matter passed by the electric eye.

The peanuts are cooked in oil and salted in much the same way as are Spanish peanuts. Slightly less time is required for the process because some of the moisture is removed during the cooking in preparation for blanching. The better grades are salted whole, but a large business is done in salted split kernels.

Salted Virginias are sometimes packed in 10-pound tins, which are equipped with a friction top and contain, in addition, small glassine bags in which to retail the peanuts. The can may be accompanied by a little measuring cup, thus enabling the grocer, druggist, or other retailer to measure out its contents accurately into the glassine bags, which are then displayed on the counter. Many salted Virginias are shipped in glassine and cellophane bags packed in cardboard boxes which are lined with paraffined paper and put in paraffined boxes. Peanuts in airtight glass containers have been opened 6 years after they were packed and found to be practically as fresh and with as good flavor as newly packed stock.

A number of firms furnish salted peanuts in glassine and cellophane bags which are already attached to large cardboards, making an attractive display. This method of distribution is popular with dealers as it requires little labor on their part.

Chicago is the outstanding market for salted peanuts, and especially for salted Spanish. The vast vending-machine system on the streets, on elevated station platforms, in stores, and in various other public places is the principal factor in producing this situation. Furthermore, most candy stores in Chicago, and in many other cities, sell salted peanuts.

Raw Shelled Peanuts

Duplex cotton bags with one side open-meshed so the nuts can be seen, and the other closely woven to permit the printing of the dealer's name or brand, have been suggested as desirable in increasing the sale of raw peanuts direct to the consumer. Several millers used this scheme of selling raw shelled nuts during the 1938 season, enclosing printed leaflets telling how to salt the nuts or use them with other products. So far, this and other methods of selling raw shelled peanuts direct to the consumer have not proved widely effective.

Competition From Other Nuts

Peanut salters say that peanuts meet less competition from domestic "tree nuts" than might be supposed, considering the large production of the latter. The basic trend of English walnut production in the United States appears to be upward. The harvested crop of English walnuts in California and Oregon for 1939 was 119 million pounds, 18 percent larger than the 1938 crop and a substantial increase over the 10-year average production for 1929–38 of 89 million pounds.

The production of improved (budded) varieties of pecans is gradually increasing, and this increase is expected to continue during the next few years. The seedling pecan crop varies widely from year to year, but the basic tendency in production is believed to be stationary or slightly upward. Largely as a result of the sharp variations in the

crop of seedling pecans the total pecan crop has fluctuated from a recent low point of 40 million pounds in 1936 to a high of 106 million pounds the year before. The average production of pecans for the 10-year period 1929–38 was 63 million pounds.

California produced 40 million pounds of almonds in 1937, 30 million pounds in 1938, and 38 million pounds in 1939. Although the average production during the period 1929–38 was only 25 million pounds, heavy plantings of trees in recent years should mean a continuation of larger crops for some years to come.

The commercial production of filberts is a young and rapidly expanding industry. From 120,000 pounds in 1927, the first year for which official estimates are available, production in the United States increased to 7,500,000 pounds in 1939.

In addition, many million pounds of almonds, Brazil nuts, cashews, chestnuts, filberts, and walnuts are imported. Imports during recent years, however, have been substantially below those of previous years. In spite of heavy imports of cashews and Brazil nuts, total imports of tree nuts during the 5-year period 1934–35 through 1938–39 were 20 percent below the imports for the 5-year period 1925–26 through 1929–30. In fact, whereas in the early 1920's imports of tree nuts were roughly 2½ times as great as the domestic crop of such nuts, production has so increased and exports have so decreased that for several years imports have been less than the quantity produced in this country.

A substantial proportion of domestic tree nuts are sold to consumers in the shell; but most imports, except of chestnuts, Brazil nuts, and

TABLE 4.—*Imports of cashew nuts for consumption during calendar years 1930–39*

Country	1930 [1]	1931	1932	1933	1934
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*
France		38, 506	32, 164		2, 750
Germany		35, 500			
Italy				57, 500	15, 000
Haiti, Republic of	113, 955	42, 630	3, 440	32, 319	106, 294
Brazil		1, 212	13, 817		
British India	3, 880, 257	10, 083, 901	8, 530, 454	12, 242, 456	14, 610, 967
Ceylon		143, 300		20, 000	
Other Asia		6, 760		152, 650	150, 900
British East Africa					10, 742
Egypt	85, 000				
Mozambique			33, 750	17, 150	
Other countries	200	4, 622	9, 764	4, 317	2, 500
Total	4, 079, 412	10, 356, 431	8, 623, 389	12, 526, 392	14, 899, 153

Country	1935	1936	1937	1938	1939
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*
France		15, 000			
Italy		14, 550	7, 500		
Haiti, Republic of	56, 206	64, 137	21, 744	45, 284	12, 622
Brazil	17, 841	153, 214	37, 327	1, 323	
British India	22, 212, 510	21, 804, 105	26, 747, 576	26, 006, 821	29, 439, 978
Ceylon	12, 500				
Other Asia	42, 250		12, 500	6, 000	
British East Africa	34, 950	33, 050	13, 500	3, 850	13, 500
Mozambique		4, 200		2, 450	
Other countries	175	13, 558	8, 000	3, 100	
Total	22, 376, 432	22, 101, 814	26, 848, 147	26, 068, 828	29, 466, 100

[1] Figures for 1930 are general imports.

pistachio nuts, are sold in the shelled form. Even when shelled and sold salted, however, the chief competition that peanuts experience from most tree nuts other than cashews is when they both appear in the mixtures of salted nuts that seem to be increasing in popularity. Recently, too, the sale of salted nuts, especially English walnuts, in small envelope sacks, has increased at drug store and other counters.

Peanut salters are, however, much concerned over the serious and increasing competition that peanuts receive from salted cashews. Imports of cashews (table 4), coming almost altogether from British India, increased from 4 million pounds in 1930 to over 29 million pounds in 1939. Except for a small volume of cashews going into cashew butter and into candy bars, these large importations of cashews are salted and sold in nut stores, drug stores, etc., to much the same class of trade that might otherwise buy salted peanuts.

Peanut Butter

Peanut butter first came into use about 1890 as a food for invalids. Now it is such a staple article of food that peanut-butter factories take more peanuts than any other one industry. Leaders in the industry estimate that during the 1937–38 season probably from 225 to 250 million pounds of peanut butter were made, requiring 400 million pounds of farmers' stock peanuts. The food value of peanut butter is very high.[15]

Peanut butter contains only the ground kernels of roasted blanched peanuts, with the addition of 1½ to 3 percent of salt. A very few manufacturers include a small quantity of sugar in their products. High-grade peanut butter retains its sweetness and flavor many months in an airtight package. Large quantities are used in the commercial manufacture of sandwiches, candy, and bakery products, but its chief use is in the home.[16]

Some peanut-butter manufacturers find it possible to make a salable peanut butter out of Virginias alone or Spanish alone, and during recent years much peanut butter has been made solely from Runners. Many of the better-known makers of peanut butter, however, still prefer a blend of the Spanish and Virginia types of peanuts.

The Spanish type of peanut contains an average of 50 percent of oil; the Virginia type of peanut contains approximately 42 percent of oil (*34, p. 10*). For most tastes, a butter made solely from the Virginia type of peanut is too dry, and a butter made from Spanish alone is too oily. Used in combination the drier Virginias absorb the excess oil of the Spanish. There is no uniformity in the proportions used of the two varieties. Some manufacturers employ a 50:50 combination; others prefer 60 percent of Spanish and 40 of Virginias; and one manufacturer claims that the best butter comes from a combination of two-thirds of No. 1 Virginias and one-third of No. 1 Spanish. The proportion of the different varieties used depends upon the degree of oiliness desired. Many manufacturers now substitute Runners for Virginias, but use a smaller proportion of Spanish because the Runner is more oily than the Virginia-type peanut. An

[15] For calorific value of peanuts and other foods, see Literature Cited (*2, 11*), p. 120.
[16] For recipes for the use of peanut butter in the home, see Literature Cited (*6, 33*), pp. 120 and 122.

occasional peanut-butter maker believes his product is improved by using a mixture of Spanish, Runners, and Virginias. Most of the recent importations of Philippine peanuts have gone into the manufacture of peanut butter, usually without mixing with other stock.

In order to give a firmer texture to its butter, at least one firm removes the oil, hydrogenates it, and then stirs it back into the product.

The peanut-butter factories buy shelled goods only, usually raw, of the grades necessary to produce the quality of peanut butter that they manufacture. Occasionally manufacturers of small quantities of peanut butter purchase shelled peanuts that have already been roasted and blanched. The same thing is true of a few small salters and candy manufacturers, except that the latter firms buy "white roast" peanuts, whereas concerns wanting them for butter usually get "brown roast" goods.

When bought in the raw state, the peanuts are roasted in cylindrical roasters, much as described on page 74, and cooled. When used exclusively for shelled peanuts, manufacturers prefer a cylinder with a very smooth interior surface, that can be geared for operation at low speed. Virginia-type peanuts are commonly roasted from 35 to 45 minutes; Spanish peanuts a little less. Machines have been placed on the market recently, however, which, by a new method of heat treatment, require only from 9 to 15 minutes to roast the nuts even though lower temperatures are used than in the older type machines.

In some modern factories the raw shelled peanuts are given a pneumatic cleaning to remove bits of hulls or other trash, chaff, and dust, before they are roasted.

After being cooled the peanuts are ready for blanching in split-nut blanchers. In the type using revolving brushes, the brushes are operated against corrugated plates, thus splitting the peanuts in half and removing the seed germs or hearts, as well as the thin skins. When ribbed-roll blanchers are used only the lower belt moves. The upper belt, which is stationary, is grooved to take the place of the metal corrugated plate in the type of blancher that is equipped with brushes.

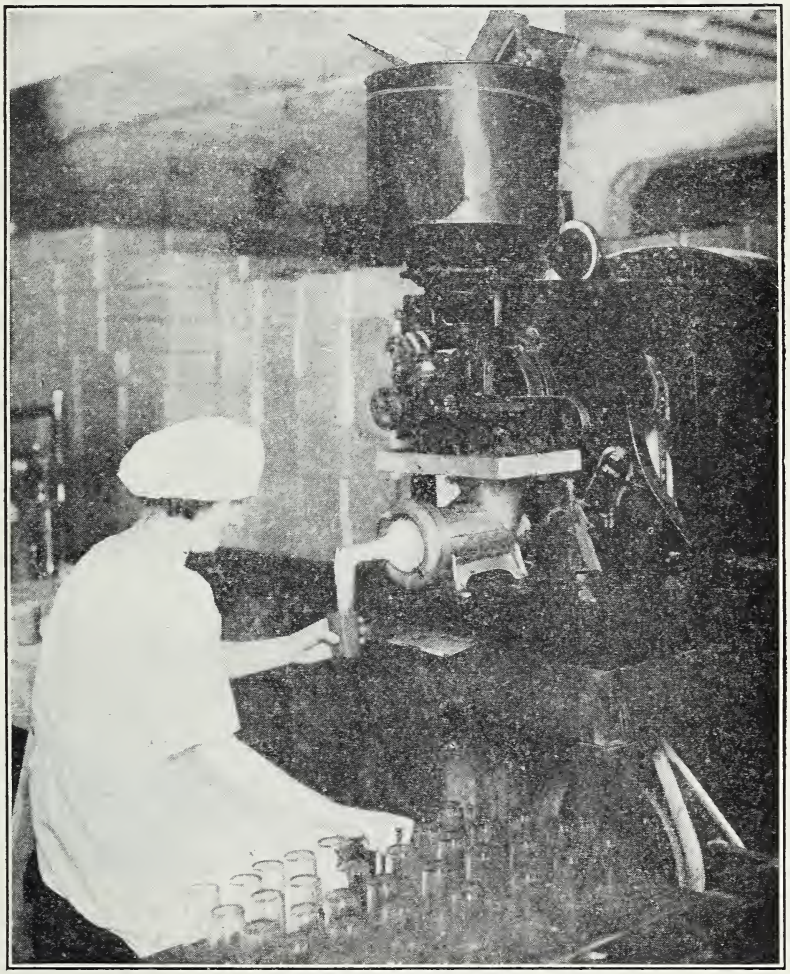
The presence of any considerable quantity of hearts in peanut butter promotes premature rancidity and gives the product a bitter taste. A specky appearance results if skins are ground with the meats, and they also give a slightly bitter taste to the butter. Badly shriveled peanuts will not blanch properly; consequently a butter containing many shriveled peanuts will be bitter and spotted.

The skins, which contain from 20 to 30 percent of oil (*32, p. 4*), and the germs may be sold for stock feed, or crushed for the oil. Peanut skins are extremely high in Vitamin B_1 (thiamin) content and whole Spanish peanuts are higher in this factor than are Virginia-type peanuts (*8*).

Before being ground, the peanuts pass over an endless-belt picking table and workers on either side remove the stones and other remaining foreign material, moldy, burnt, and off-color kernels, and imperfectly blanched nuts to which bits of skin still adhere, while the loose, light material, such as bits of skin or chaff, is drawn off by suction pipes.

The different varieties of peanuts used may be mixed in the desired proportion before being fed into the hopper of the mill for grinding

into butter, but in large plants the varieties are usually fed into the hopper in a steady stream, in the desired proportions, through chutes from the floor above. An automatic salt feeder allows a definite proportion of salt to be fed into the mill along with the peanut kernels. The grinding is done by a revolving screw, which forces the peanut mass through a pair of ribbed, grinding disks into a discharge spout. The jar or other container for the butter is usually filled directly from this spout, although a few plants have separate filling machines. The entire operation is illustrated in figure 33.



BAE 6992

FIGURE 33.—Filling glass jars with peanut butter. The kernels drop in a steady stream into the hopper at the top of the mill, a definite percentage of salt is added, both kernels and salt pass through grinding disks, and the completed product—peanut butter—comes from the spout.

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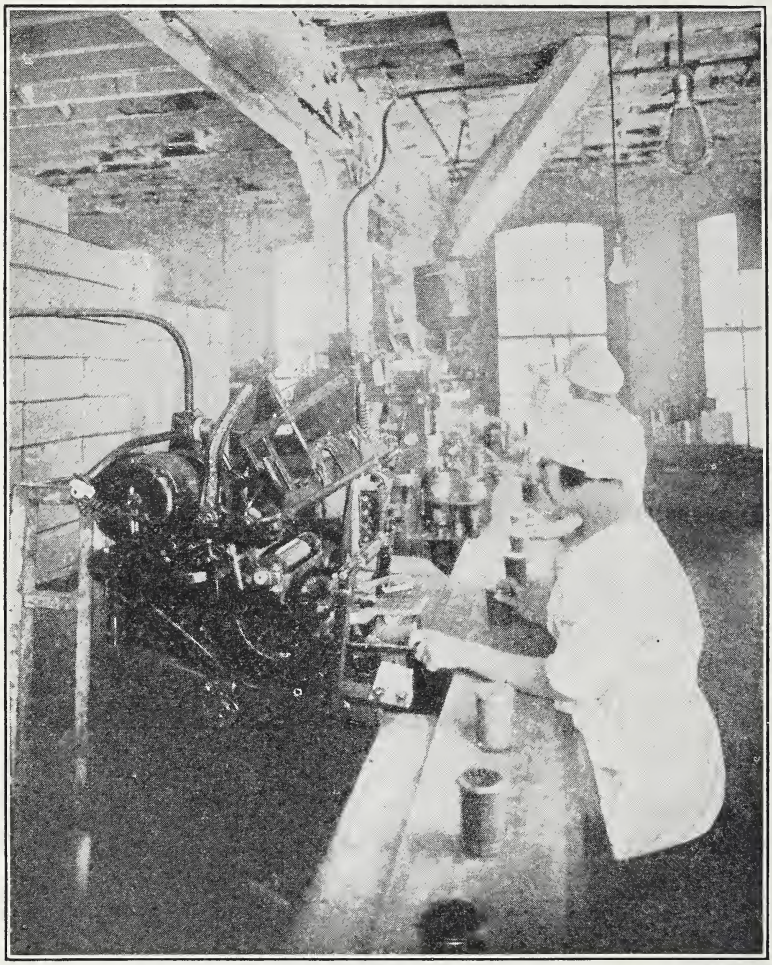
The better grades of peanut butter, made from No. 1 Spanish and No. 1 Virginias, are usually packed in glass jars holding from 5 to 32 ounces. From the filling spout the jars pass, usually on revolving belts (fig. 34) to the capping and sealing machines. Formerly it was customary for all covers to be attached by a capping machine, under a heavy vacuum pressure; now in many plants screw caps or friction lids



BAE 6990

FIGURE 34.—Filling, capping, and labeling glass jars of peanut butter. An endless belt carries the jars from one machine to another.

are put on, under vacuum. As a rule the labels are applied by hand. The glass jars are usually packed in corrugated cartons holding 2 or 3 dozen.

During the last year or two considerable interest has developed in some localities in a "chunky" peanut butter, in which bits of unground peanuts are mixed with the finely ground butter. This is made in

one of two ways. Several of the ribs in the grinding disks may be missing, thus allowing a certain proportion of small peanut chunks to slip into the mixture unground. Or roasted peanuts may be broken into granule form and a definite percentage stirred into the smooth mixture before it is packed.

Peanut butter is used as a filler in several kinds of candy. One popular style has a jacket of molasses or sirup over the butter, surrounded by a thin coating of chocolate or with a so-called satin finish. Long, straw-shaped candies with peanut-butter centers are featured by some firms, especially for children.

Sandwiches made of crackers with a peanut-butter filling are wrapped in cellophane and packed in display paper boxes, which in turn are sealed in waxed paper. They have a ready sale at delicatessen and other shops and at soft-drink counters.

PEANUT BUTTER IN BULK

Bulk peanut butter, often prepared from No. 2 grade peanuts, but also to some extent from No. 1 grade nuts, is sold in large quantities in tins having a capacity of 50 pounds. Some firms pack steel drums holding 450 pounds of peanut butter.

Demand for bulk peanut butter comes largely from institutions and from firms that use the butter in sandwiches or in candy products. The sale of peanut butter repacked from large cans or drums into wooden or waxed cardboard containers by retail stores, once so common, is now infrequent.

Although it is possible for bulk peanut butter to be of as fine quality as that packed in glass jars, it often is not. When made from low-quality peanuts, it usually contains more or less dirt, hearts, and skins of shriveled peanuts. But it is also true that some packers of peanut butter in glass, in order to meet price competition, purchase low-quality peanuts for their cheapest grade of butter.

It is impossible for a factory to turn out a high grade of peanut butter from low-grade peanuts, improperly cleaned and picked. Many leaders in the peanut industry feel that if all low-quality peanuts were crushed for oil, the demand for peanut butter would be stimulated, and repeat orders would be more general and more frequent.

Peanut Candy

Peanuts have been used by candy manufacturers since the early days of the industry. Even prior to 1885, "flat bars of sugar candy were stuck full of the broken kernels of the roasted nuts" (*25, p. 58*), and for years peanut candies of various kinds have furnished an outlet for shelled peanuts only less important than that supplied by peanut-butter manufacturers and salters, and may even exceed the use by salters in the quantity of peanuts it utilizes. Spanish, Virginia-type, and Runner peanuts are all used in candies.

CHOCOLATE-COVERED PEANUT BARS

The most extensive use of peanuts in candies is in bars of various kinds. In some of these, sometimes called "nut rolls," the center consists of a nougat or a creamy caramel, sometimes with peanut butter

added, which is covered with roasted shelled peanuts and then dipped in rich chocolate. In other bars the centers may also contain malted milk, white of egg, marshmallow, coconut, or a mixture of several of these with nougat, caramel, or peanut butter. New kinds of bars are frequently placed on the market, as manufacturers try out different combinations of peanuts, chocolate, and other products. Usually No. 1 grade peanuts are used in these chocolate-dipped bars, but No. 2 peanuts may be employed in the cheaper bars. Each bar is wrapped in glassine or similar protective paper, and 24 bars are packed in a carton.

In the better candy factories great care is taken to see that the peanuts are carefully inspected before they go into the candy mixture. A close-up view of a picking table is seen in figure 35. The inspection follows a "light roast" given in cylinder roasters, similar to that described under salted Virginias, on page 74.

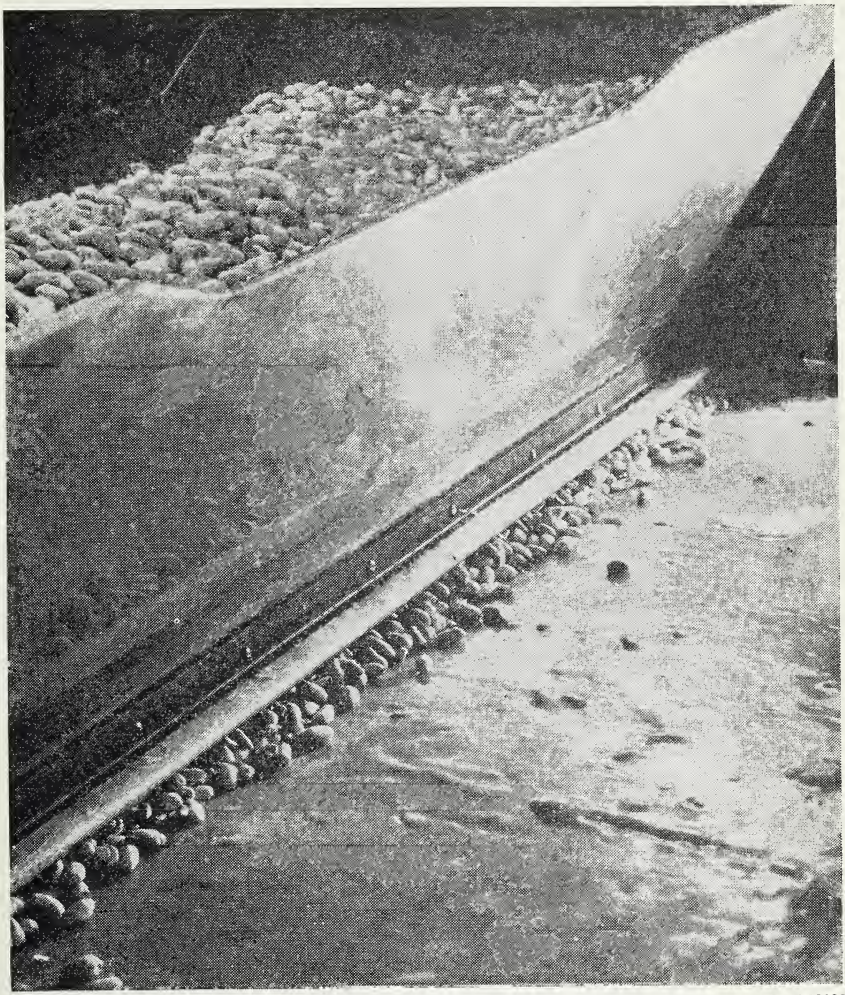
BAE 30195

FIGURE 35.—Picking table in a modern candy plant. Operators look for moldy and otherwise undesirable peanuts, and stones, as peanuts pass along the belt, as this is final inspection before peanuts go into candy mixture. Suction pipe at right-hand end of the "table" is to draw off chaff and dirt.

In some factories that make chocolate-coated bars the peanuts are pressed into the soft caramel preparation by means of a "spreader" (see fig. 36) in which the proportion of peanuts is regulated by the distances between the spreader and the mixture beneath. Then, in at least one factory, the caramel-peanut mixture is spread over a base of malted milk and egg white. The candy slabs are cut to proper length (fig. 37) and "enrobed" with chocolate (fig. 38). They are then ready for drying, covering with a glassine or similar transparent protective wrapper, and packing.

SQUARES OR PLAIN PEANUT BARS

The following formula is sometimes used commercially in making candy for "squares" or plain peanut bars: 5 pounds of glucose, 6 pounds of sugar, 25 pounds of blanched Virginia-type peanuts, and enough water to dissolve the sugar. When the sirup of sugar and water comes



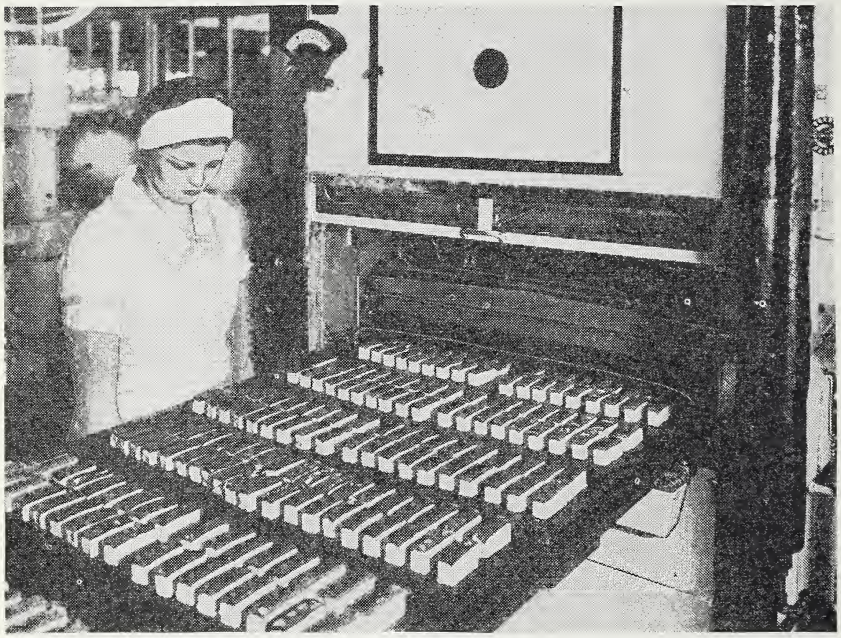
BAE 30198

FIGURE 36.—Peanut "spreader" in plant making chocolate-covered peanut bars. The peanuts are pressed into the soft caramel preparation beneath, the proportion of nuts being regulated by the distance between the spreader and the mixture.

to a boil, 10 pounds of peanuts are added to it and the mixture is cooked until the temperature reaches 265° F. or until the candy breaks crisply, which will take about 15 minutes. The mixture is then removed from the fire and the remainder of the peanuts are stirred in.

When thoroughly mixed the candy is poured onto the "cooler"—a metal slab which has had a coating of sugar to keep the candy from sticking—and rolled out. Steel bars of the thickness desired—about 1½ inches high for 5-cent bars—at either side of the table keep the sticky mass from running over and provide a base along which a heavy roller is run to give the candy a uniform thickness, much as the housewife rolls out dough.

Several manufacturers add coconut to the formula for squares and call the resulting product "chop suey."



BAE 30200

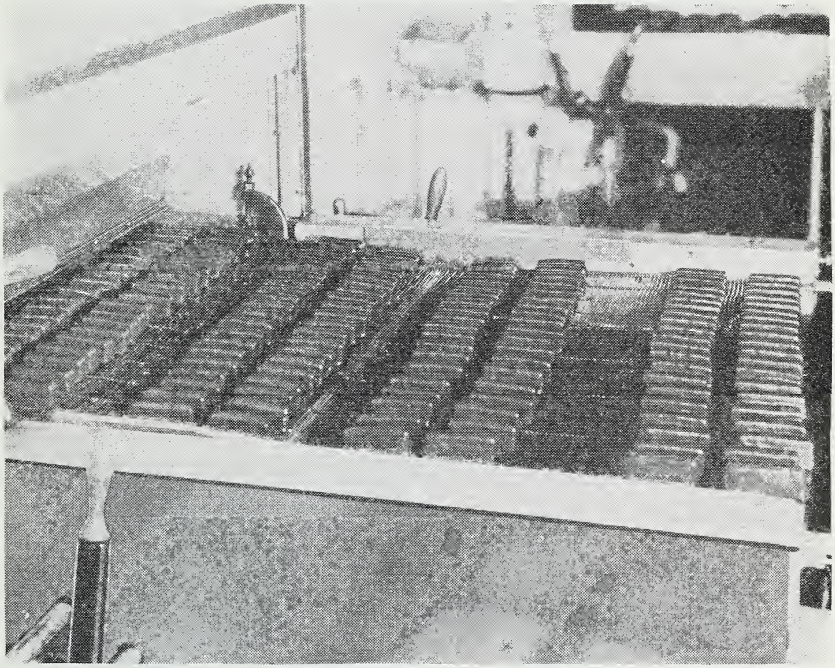
FIGURE 37.—Peanut-candy bars after leaving cutting machine. The top of the bar is a peanut-caramel preparation, while the base consists of malted milk and egg white.

As uncoated peanut bars and squares are sold by count rather than by weight it is important that they be cut to a definite size. The cutter (fig. 39) consists of a hand roller with sharp metal disks attached to it at definite intervals. A typical uncoated bar measures 3⅜ by 2⅜ inches. Some manufacturers pack 30 of these bars in a paraffine-lined cardboard box, which weighs about 4 pounds when packed; others pack 24 bars to a box. The smaller penny bars or squares are packed 100 or 120 in a box. Figure 40 shows bars of uncoated peanut candy being packed in 4-pound boxes.

No. 2 peanuts are often used in the cheaper types of plain bars, and especially in squares; but in the better grades of bars No. 1 peanuts are used.

PEANUT BRITTLE

Peanut brittle, which is not manufactured as extensively as it was before other candies became so popular, is made generally with No. 1 grade peanuts. Proportionately more sirup is needed when peanut brittle is prepared than in the formula for plain bars. One manufacturer uses the following formula: 12 pounds of glucose, 18 pounds of white sugar, 2 pounds of brown sugar, 16 pounds of No. 1 raw Spanish peanuts, 2 ounces of salt, 3 ounces of bicarbonate of soda. The glucose and sugar are placed in a pan with enough water to dissolve the sugar. When the sirup boils, the peanuts are added and the



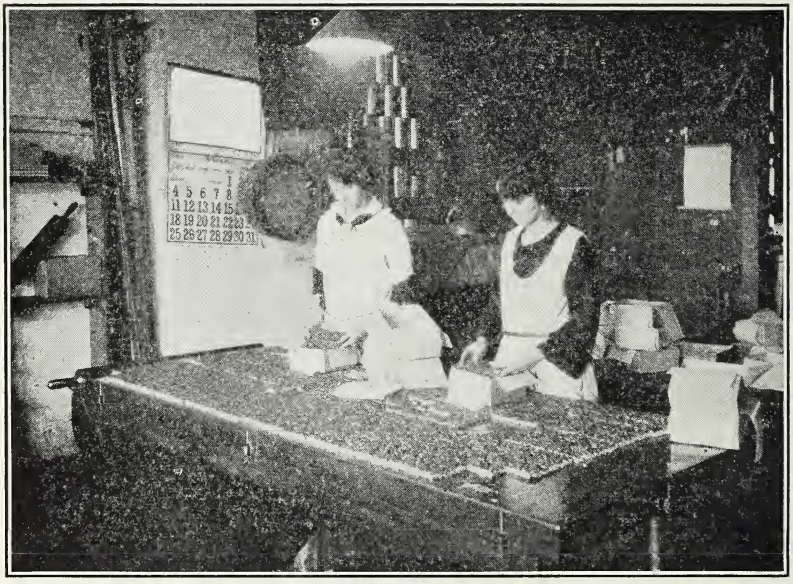
BAE 30196

FIGURE 38.—Chocolate-covered candy bars ready for drying and packing. The bars seen in figure 37 have passed through an "enrobing machine" where chocolate has flowed over the bars and has been whipped up against the bottoms of the bars so they are completely covered with chocolate.

mixture is cooked at 290° F. A longer time is required in cooking brittle than other candies, as the peanuts have had no previous heating. All peanut candy must be stirred continually when on the fire to prevent sticking. The exact time to stop the cooking is determined by dipping a spoonful of the mixture into cold water. If the brittle is done, it will harden at once. After it is removed from the fire, the salt is added and stirred in well. The soda is then added and the mixture is stirred thoroughly. When the batch has risen, it is poured onto a marble slab. Brittle is not rolled out, but is spread with a spatula to a rather uniform thickness, and cut while still warm. The

BAE 6921

FIGURE 39.—Cutting uncoated peanut candy into 5-cent flat bars. As the candy hardens quickly, the cutting must immediately follow rolling it to a uniform thickness.



BAE 6920

FIGURE 40.—Packing bars of uncoated peanut candy in cardboard boxes lined with paraffined paper. These are the bars that were cut in figure 39.

exact thickness is not important, as peanut brittle is sold by weight, in cartons lined with paraffined paper and holding ½ pound, 1 pound, 5 pounds, 10 pounds, or sometimes 25 pounds of the candy.

SUGAR-COATED PEANUTS

The preparation of sugar-coated peanuts is an industry of considerable importance in some cities. These peanuts are often prepared in small candy kitchens with inadequate equipment, but when prepared commercially large revolving pans equipped with steam coils on the outside, are employed. Extra large shelled Virginia-type peanuts, fully roasted and blanched, are generally used, though occasional manufacturers make sugar-coated nuts out of mediums or No. 1 Virginias. The nuts are turned for 3 hours in the pan, while small quantities of a sirup made of equal parts of glucose and sugar are poured in at intervals. The sirup is taken on by the peanuts, and the rubbing of the kernels against each other as they revolve gives them the desired roughened appearance. A little reddish coloring matter is often included in the last sirup mixture. The peanuts are then slightly coated with gum arabic and allowed to stand overnight, after which they are returned to the pan and a thin coating of lac is applied. When dry they are packed in small cardboard packages that retail for 5 cents, or they may be sold in bulk. Burnt peanuts is the name applied by the trade to sugar-coated peanuts that have been given a final cooking to harden the surface before receiving the coatings of gum arabic and lac.

CHOCOLATE PEANUT BARS

A large business in chocolate peanut bars is done by candy firms. These bars are like the better known chocolate almond bars except that extra large, medium, or No. 1 shelled Virginia peanuts replace the almonds. They are covered with opaque wrappers and packed 24 to a box.

Among numerous other confections in which peanuts are used is one that has a marshmallow drop as a base. These drops are rolled in peanuts and then covered with chocolate. Chocolate-covered peanuts are sold in large quantities, especially in 5- and 10-cent stores.

Bakery Products

In a few cities, a considerable volume of shelled Virginia-type and Spanish peanuts is absorbed by large bakeries and makers of confections. Peanut cookies and peanut jumbles, packed in parchment paper and tightly sealed in small cardboard boxes or cartons, are sold in all parts of the country, at groceries, delicatessens, and general stores. These contain either split peanuts or small pieces of roasted peanut kernels. Some firms put out 50-pound bags of roasted peanut granules made for this purpose by breaking up roasted shelled peanuts. Granulated Virginia-type peanuts are sometimes sprinkled on the top of German coffee cake and other bakery products.

Peanut Oil

Before the World War comparatively little American peanut oil was produced, but during the war the tremendous demand for vegetable

oils to supply glycerin for munitions purposes and to meet the growing requirement for margarines and lard substitutes, served as a powerful stimulus to increased crushing. By 1918 a production of 95,934,000 pounds of peanut oil was reached (*5, p. 1*) and imports were heavy. The year following, production fell slightly to 87,606,844 pounds (*40, p. 4*) but net imports for the fiscal year 1919–20 increased to 165,390,713 pounds. This was the all-time peak of the imports of peanut oil into this country.

The production of peanut oil gradually lessened, and until the crop of 1934 shelled peanuts usually sold sufficiently higher in relation to the price of peanut oil so that it was rarely profitable to crush any farmers' stock that was suitable for shelling. Crushing was therefore confined principally to peanuts picked out by operators at the picking tables in the shelling plants as being below grade, broken bits screened out, and other so-called oil stock or mill stock, amounting to perhaps 100 pounds to the ton of farmers' stock peanuts, and to occasional lots of farmers' stock that was of inferior quality.

When the peanut diversion plan of the A. A. A. went into effect with the 1934–35 crop it immediately resulted in heavy crushing of peanuts for oil. Before the close of the season 153 million pounds of farmers' stock peanuts were diverted to oil mills in addition to the usual small lots of mill stock that were crushed for oil. The diversion program for the 1935–36 season resulted in crushing even more peanuts than during the preceding season, the diversions totaling about 73 million pounds of farmers' stock. No marketing plan was undertaken by the A. A. A. for the 1936–37 crop as the shortage of edible oils was such that the price of farmers' stock peanuts for crushing was higher than the minimum prices specified for the crops of the two preceding seasons. Crushings during 1936–37 were even heavier than during the two previous seasons, however, and the movement of 784 cars of crude peanut oil from southern producing areas in addition to many carlot equivalents of refined oil, established a new high record up to that time for the production of peanut oil in the United States. During the 1937–38 season crushing of Virginia-type peanuts established a new record for large-podded peanuts—232 cars of crude oil, besides many carlot equivalents of refined oil, with 167 million pounds of peanuts diverted by the cooperatives in the producing areas. Diversions during the 1938–39 season totaled some 260 million pounds of farmers' stock, and another new record was made of shipments of crude peanut oil, totaling over 1,080 cars.

OIL MILLS

Many peanut mills in the Southeastern and Southwestern States are equipped with both shelling and crushing machinery. In the early days of the peanut industry these mills either shelled or crushed their purchases of farmers' stock peanuts in accordance with the variety and grade of the nuts and the trend of the market. During recent years, with thousands of tons of diverted peanuts available, many millers, especially in the Southeastern States, have followed the same procedure. Occasional mills are not equipped with shelling machinery but crush exclusively; practically all of these mills also crush cottonseed.

Peanuts intended for crushing do not need to go through elaborate cleaning machinery. It is considered sufficient to run them through a dirt reel and sometimes through a shaker and stoner before they pass into the huller, which should be equipped with suction fans for drawing off the hulls. But often the peanuts pass over a magnet also to draw off small pieces of iron.

CRUSHING THE PEANUTS IN HYDRAULIC PRESSES

In some southeastern plants peanuts intended for crushing are dumped from the farmers' trucks onto an inclined endless chain belt, having buckets or drags to carry the nuts. The buckets have perforated bottoms through which the dirt falls. The peanuts are carried to the top of the warehouse before being dumped. Later, when they are needed for crushing, they pass through a "boll reel," with which most southern plants are equipped for the separation of burrs from cottonseed, or they may pass through a sand and dirt reel. The sticks, stems, and other trash are removed by a shaker screen, usually with 1-inch holes, slanting downward, which permit the peanuts to drop through while the larger trash tails over.

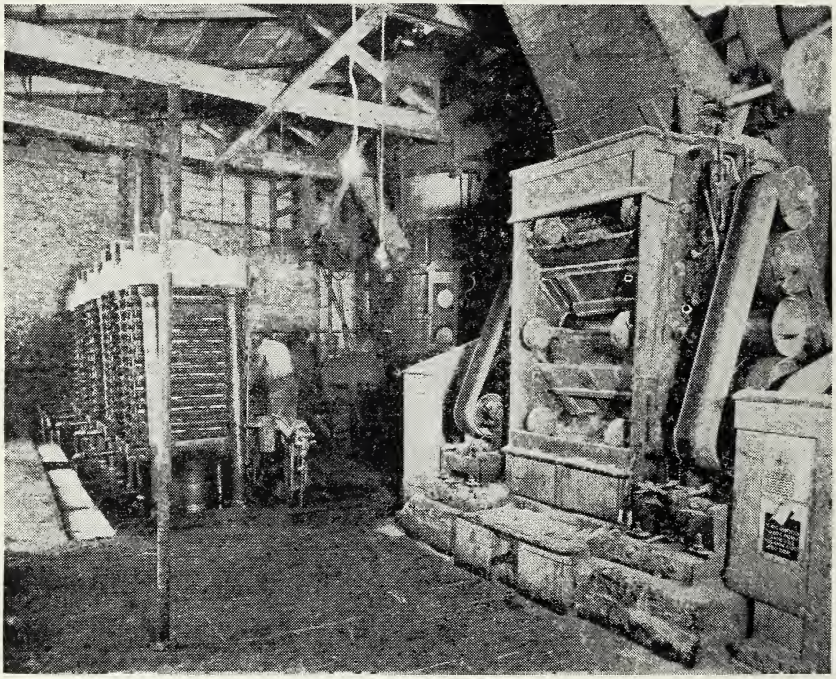
The hulls are then broken in a cottonseed disk huller in which the knives have been set farther apart than when used for cottonseed. This operation tears or cuts the pods and partially breaks up the meats. The stock is then conveyed to a shaker screen, where the meats are separated from the pods, and the latter removed with the aid of fans and a suction pipe or cyclone separator leaving the broken meats comparatively free from foreign matter.

One reason for breaking up or cracking the meats is to enable them to pass more readily through rollers which mash them into a pulp (fig. 41) after the hulls have been removed. The object of rolling the kernels is to open the oil cells as much as possible, thus obtaining a more complete extraction of the oil. From the rollers the meats or pulp go to the cooker, which is a steam-jacketed kettle in which the material is heated under 60 pounds pressure for half an hour or more to further rupture the oil cells. In some plants the cooking is done in three or four stages in separate compartments, the material dropping from one to the other by gravity.

From the cooker the material goes to a haircloth mat placed on the cake formers. This haircloth mat, which is 52 to 60 inches long and 13¾ inches wide, is folded over the cooked pulp. The cake former, under pressure, makes a cake 26 to 30 inches long. A laborer runs a thin steel sheet, known as a cake pan, under the formed cake and places it (fig. 42) in one of the compartments of the hydraulic press, of which there are usually 12 to 15. When the several compartments in the press are filled with the cakes the press is gradually brought up to a pressure of 4,000 to 4,500 pounds and the oil runs down the sides of the press into a drain beneath. From 30 to 36 minutes are usually taken to press and drain the oil, though some mills take only 20 minutes for this operation.

The oil, which is yellow in color, except when made from pick-outs and off-grade farmers' stock, when it is darker, is pumped to a storage tank outside the mill, which may hold several tank carloads of oil. Some mills filter the crude oil to remove particles of meal; others allow

any residue of meal that is contained in the oil to settle to the bottom of the tank. The settlings, or foots, are removed from the tanks periodically and may receive further processing for recovery of by-products. The oil is pumped as needed for shipment into tank cars, which usually hold around 60,000 pounds of oil, though some tanks carry 75,000 pounds. For practical purposes a gallon of peanut oil is considered by the trade as weighing 7½ pounds, though actually this weight is about 7⅔ pounds.



AMS 1174

FIGURE 41.—Crushing-mill scene showing rolling equipment in right foreground. These rolls mash the peanuts into a pulp, thus opening the cells and aiding in obtaining a more complete extraction of the oil. Cooker is in rear center and cake former is between the cooker and the hydraulic presses in left center.

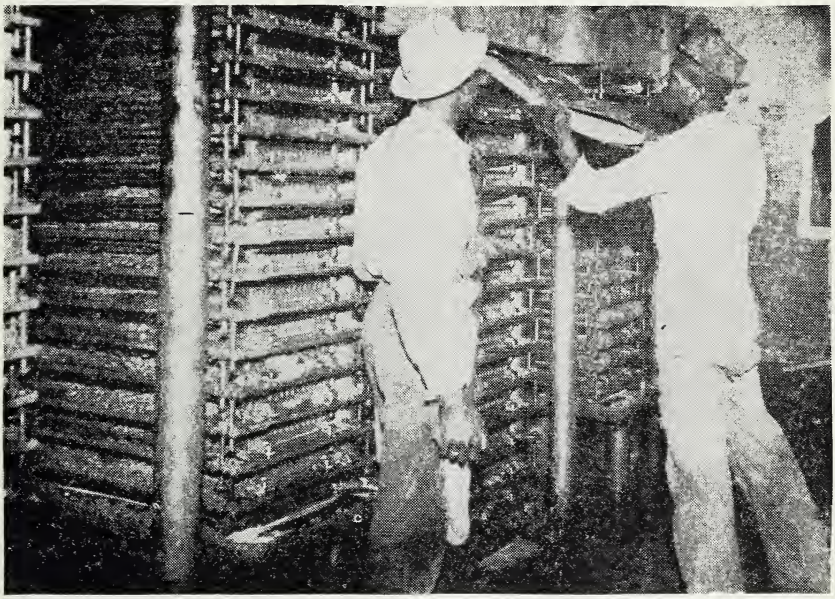
EXPELLER PRESSES

Most peanut oil is crushed in hydraulic presses (fig. 42), as described above, but in the early days of the crushing industry expeller presses were in general use, and several of the newer mills have installed modern expeller equipment. The old expeller presses were, in effect, large endless screws within a steel barrel, which worked much like an enormous meat grinder. The uncooked shelled peanuts, and sometimes unshelled peanuts, were forced through the press, after being heated to some extent in a steam-heated conveyor that carried the material to the expeller. The cake came out of the expeller in a ribbonlike form which was broken up into small pieces before being sold. The old-

type expeller presses, which are still used in a few mills in the Southwest, leave more oil in the meal than do hydraulic presses.

The modern expeller press, which is used by several mills in both the Virginia-North Carolina section and in the Southeast, operates only with shelled peanuts. The peanuts are first run through a steam-heated dryer, which reduces their moisture content to 2 or 3 percent. The nuts are then carried by a conveyor to the steam-jacketed tempering apparatus of the press, where they are heated to about 230° F., or to practically the same temperature as peanuts receive when they are cooked preparatory to crushing in the hydraulic press.

The peanuts are then forced by an automatic feeder screw to the expeller barrel beneath. Here they are crushed in the barrel or pressing cylinder of the expeller. The oil comes out through openings in the steel spacer bars of the cage or barrel, and passes to the storage tank. The cake is pushed out by a heavy screw conveyor and is carried automatically to attrition mills for grinding.



AMS 1182-A

FIGURE 42.—Hydraulic presses, used to remove oil from peanuts. Aided by a "cake pan," a laborer is placing a haircloth mat, which has been folded over cooked pulp, in one of the compartments of the press.

YIELDS OF PEANUT OIL AND PEANUT MEAL

The quantity of peanut oil obtained from a ton of crushing stock depends upon the variety of the peanuts, the quantity of hulls or other trash in the lot, the maturity of the peanuts, and upon whether the nuts are straight farmers' stock or so-called mill stock or oil stock. When crushed from good farmers' stock the resulting oil is lighter in color and has a lower refining loss than when it is obtained from oil

stock or low-grade shelled goods. Mature peanuts yield more oil than do the immature.

Variations in the yield of oil are sometimes wide even for one variety during a short period of time. For example, a report from 18 southeastern mills for the first week of December 1936 showed a variation in the yield of Runner peanuts during that week between different mills of from 550 to 590 pounds to the ton. The record of the crushing of 76,000 tons of farmers' stock peanuts diverted through the Agricultural Adjustment Administration during the 1934–35 season, including 42,000 tons of Runners, 24,000 tons of Spanish, and 10,000 tons of Virginias, showed average oil production to be 590 pounds to the ton of Spanish, 571 pounds to the ton of Runners, and 454 pounds to the ton of Virginias. Wide variations from these figures occurred with each variety.

And the average yield of oil varies widely from one season to another. In contrast with the figures just given are those of the A. A. A. report of crushing of 63,000 tons of farmers' stock diverted during the 1937–38 season, including 28,000 tons of Runners, 27,000 tons of Virginias, and 8,000 tons of Spanish. Average oil yields were reported as 508 pounds to the ton of Virginias, 563 pounds to the ton of Runner farmers' stock, and 610 pounds to the ton of Spanish. The Virginias and Spanish peanuts were considered to be of better quality than were the same varieties during the 1934–35 season; whereas the quality of the Runners crushed was somewhat below that of the previous period.

The difference in the oil yield between Spanish and Runner farmers' stock in the Southeast may be due in part, according to millers, to the fact that the average load of Runner farmers' stock has not been cleaned as well as the average load of Spanish, and contains more trash and dirt. The trash and dirt are weighed as a part of the load but are screened out before crushing. The proportion of oil in farmers' stock peanuts, therefore, is not a true indication of the oil content of the nuts received, but depends partly on the quantity of extraneous material included in the nuts as delivered.

Mills in the United States do not now crush unshelled peanuts. Not only are both the oil and the meal so produced of a lower grade than when made from shelled peanuts, but the shells absorb oil, making the resulting meal less desirable for feeding to stock. The cost of cleaning and shelling is more than covered by the increased yield of the oil obtained from the shelled peanuts. The exclusion of the hulls also adds to the value of the meal as a stock feed by reason of the increase in the protein content of the meal.

The quantity of peanut meal obtained from a ton of farmers' stock peanuts differs widely, depending on the variety and the quality of the lot being crushed. An analysis of the returns from the 76,000 tons of farmers' stock peanuts diverted by the A. A. A. during the 1934–35 season, referred to above, indicates that average returns for the season were 931 pounds of meal from a ton of Spanish farmers' stock; 871 pounds of meal from a ton of Runners; and 780 pounds of meal from a ton of Virginia farmers' goods. Individual mills, however, reported figures differing from these averages to an appreciable extent.

Records of the 63,000 tons of farmers' stock diverted during the 1937–38 season indicate that an average ton of farmers' stock Spanish yielded 898 pounds of peanut meal; a ton of Runners, 837 pounds of meal; and a ton of Virginias, 809 pounds of meal.

It is clear, then, that the season as well as the variety should be specified when referring to the meal or oil content of an average ton of peanuts.

A ton of No. 1 farmers' stock Spanish peanuts, for example, might yield from 590 to 610 pounds of peanut oil, from 898 to 931 pounds of peanut meal, around 100 pounds of manufacturing loss chiefly in the form of moisture, and the remainder hulls and foreign matter.

The refining loss of crude peanut oil will range from 2.5 to 15 percent, depending upon the quality of the peanuts crushed, but with good farmers' stock it rarely exceeds 6 percent. Prime crude oil is usually sold on the basis of 5-percent refining loss, and for each 1 percent of loss above 5, 1 percent of the contract price is customarily deducted. No premium is allowed when the refining loss is under 5.

VIRGIN OR COLD-PRESSED OIL

The crushing of oil from peanuts is an old industry around Bordeaux, France, where the refineries are situated in such a manner that the peanuts can be discharged directly from cargo vessels into the storage bins of the mills. In France peanut crushing is a major enterprise and not a byproduct operation of the shelling industry as it frequently has been in this country.

The peanuts crushed in the Bordeaux area are chiefly unshelled African peanuts, which are received as bulk cargo. After being shelled and cleaned the shelled nuts are ground and then crushed unheated in hydraulic presses. This first pressing removes from 85 to 88 percent of the total oil content of the peanuts and the product is known as virgin or cold-pressed peanut oil. Imported shelled nuts also are crushed but the resulting oil is generally refined and deodorized when it is to be sold as edible oil, as the nuts are often rancid. It is stated that the acidity of the virgin peanut oil known as Rufisque Vierge rarely exceeds 0.6 percent. The consumption in France of peanut oil for edible purposes has rapidly increased since the World War, and in southwest France peanut oil has largely replaced olive oil for salad dressings and for general cooking purposes.[17]

At the close of the World War attempts were made by several American firms to place a virgin or cold-pressed peanut oil on the market in tins and bottles, but the oil turned rancid on the grocers' shelves, and production stopped. Virgin or cold-pressed peanut oil was not produced commercially in the United States in 1939. Yet many Europeans prefer virgin peanut oil to olive oil.

REFINING AND BLEACHING

Regardless of the success of virgin or cold-pressed peanut oil in Europe, in this country it is considered necessary to refine peanut oil for edible use. This operation involves the removal or the reduction

[17] CUSSANS, FRANK, Vice Consul to Bordeaux, France, Report, THE BORDEAUX PEANUT OIL INDUSTRY, Feb. 18, 1935. [Typewritten.]

of suspended matter, free fatty acids, albuminoids, flavor, and coloring matter present in the crude oil. To some extent the suspended material is removed by settling prior to subjecting the oil to refining processes and accordingly reduces the refining loss.

In the refining process the crude peanut oil is treated with a solution of caustic soda (sodium hydroxide), which neutralizes the free fatty acids and precipitates much of the undesirable coloring matter. The alkali combines with the free fatty acids and with part of the oil to form a soap stock called foots, which settles to the bottom of the refining kettle. In some plants the oil is no longer refined in kettles but by high-speed centrifuges.

Bleaching is usually accomplished in a batch process by mixing the hot refined oil with a small quantity of fuller's earth to which activated carbon is added if necessary. The spent absorbent is then removed from the oil by filtering. As the oil, after the refining and bleaching, still has considerable odor, it is subjected to a deodorizing process in which it is heated under vacuum and is blown with superheated steam. The odors are thus carried away and the resulting product is a bland, tasteless oil.

USE IN COMPOUNDS, VEGETABLE COOKING FATS, AND OLEOMARGARINE

The chief use of peanut oil for many years has been in the manufacture of compounds (sometimes called vegetable shortenings) and vegetable cooking fats, with oleomargarine, salad-oil blends, and refined peanut oil for salad and cooking purposes following in importance. Both domestic and imported peanut oil are used in these products.

COMPOUNDS (VEGETABLE SHORTENINGS) AND VEGETABLE COOKING FATS

Compounds (vegetable shortenings), formerly called lard compounds, are made from one or more of such fats and oils as cottonseed oil, palm oil, soybean oil, peanut oil, sesame oil, coconut oil, corn oil, linseed oil, edible animal stearin, edible tallow, lard, fish oils, and a few other minor oils. Usually not more than two or three of these fats and oils are combined to make the finished product in any one factory. The term compound or vegetable shortening is generally used when the fats and oils are hardened by a process known as hydrogenation to give them a consistency and texture somewhat similar to that of lard. Some factories run their hydrogenated products over a chilled "lard roll" to improve the body and plasticity of these products. In recent years a considerable proportion of the vegetable shortenings on the market have been made in homogenizers known as votators. Hardened vegetable oils, including peanut oil, are white, tasteless, and odorless. When made solely of vegetable products and sold in the liquid form, compounds are called vegetable cooking fats.

OLEOMARGARINE

Oleomargarine is composed of various mixtures of one or more of the following: Cottonseed oil, coconut oil, soybean oil, babassu oil, peanut oil, oleo oil, edible animal stearin, lard, palm oil, and corn oil, churned in whole milk or skimmed milk and with salt added. Regardless of the kinds of fats and oils used for making the margarine,

an Act of Congress (*35*) requires that margarines of whatever fat content must be labeled "oleomargarine."

NUT MARGARINE

Nut margarine is a white product in which only true nut oils can form the base. Although not a nut botanically, the peanut has been grouped with the coconut, babassu nut, and palm nut for this purpose.

To comply with the law, nut margarines must be labeled "oleomargarine." As colored margarines are subjected to an internal revenue tax of 10 cents a pound, most manufacturers place their products on the market in the white form, which is taxed only ¼ of a cent a pound (*29*).

OTHER USES OF PEANUT OIL

The better grades of refined peanut oil are used in certain salad-oil blends, for which it is considered to have a superior value. A white form of refined peanut oil enjoys much popularity among the Jewish trade in several eastern cities. Several peanut oil and olive oil blends are packed in tins with labels written in the Italian language in order to appeal to the Italian trade.

Recently several firms have placed on the market a highly refined peanut oil, which is finding a ready sale as a salad oil, and also for use in frying and sautéing, and as a shortening in pastries and breads.

Peanut oil is considered one of the finest of fats for the deep-fat frying of potato chips, doughnuts, croquettes, oysters, and other foods for which deep-fat cooking is desirable. Peanut oil can take so much heat before it begins to smoke and scorch that it allows food to cook thoroughly and yet brown satisfactorily on the outside.

To provide more information in this field a cooperative study was started by the Bureaus of Home Economics, Animal Industry, and Plant Industry in 1933 (*26*) on nine fats used in the preparation of potato chips. The fats used were three kettle-rendered lards from animals fed on rations consisting largely of (1) peanut, (2) corn, and (3) brewer's rice, a standard prime steam lard, a hydrogenated lard, a hydrogenated cottonseed oil, and three highly refined oils from corn, cottonseed, and peanuts, respectively. Throughout the studies it was considered that a satisfactory fat for frying should be stable; should have a high smoking point and not deteriorate unduly; and should produce a high-quality product that could be merchandized without too great a loss of quality. The averaged values of the palatability tests made upon the potato chips showed that from the standpoint of general desirability, the oils were preferable for frying to the lards. Desirability of flavor was the most important item in forming the general opinion, and in the tests made the peanut oil was judged to impart the most desirable flavor to the potato chips.

The food value and consumer uses of various fats and oils are discussed briefly in a recent leaflet issued by the Bureau of Home Economics (*42*).

Peanut oil has a higher coefficient of digestibility than a number of other important edible oils. This was brought out in an investigation by Langworthy and Holmes (*27*) who conducted experiments with young men to determine the digestibility of a number of fats. In this study the coefficient of digestibility of peanut oil was found to be 98.3,

that of sesame oil 98.0, of coconut oil 97.9, of olive oil 97.8, and of cottonseed oil 97.8. Somewhat different coefficients of digestibility with rats fed different vegetable and animal fats resulted from recent experiments carried on by Hoagland and Snider (*22*).

The preparation of canned sardines has at times taken a small quantity of refined peanut oil. As peanut oil will stand a higher temperature than olive oil, the sardines may be cooked in peanut oil, which is drained off and the fish then covered with olive oil in the tins. Sardines may also be cooked and packed in cottonseed oil.

The manufacture of toilet soaps utilizes some of the lower grades of peanut oil, and the foots or residues from the refining processes are used in soaps and lubricating oils. Spent oil from the plants of peanut salters is also sold as soap stock.

IMPORTED PEANUT OIL

Imports of peanut oil vary exceedingly. During the fiscal year 1935, for example, they totaled 60 million pounds, but during the previous year little more than 1 million pounds of peanut oil were brought into this country. Imports during the fiscal year 1936, of 66 million pounds, exceeded those of any fiscal year since 1920, when 165 million pounds came into the United States. During the intervening period, however, yearly imports were rarely over a few million pounds. Imports had fallen to 16 million pounds by the fiscal year 1939.

During recent years the Netherlands and China have been the leading sources of imported peanut oil. Most of the oil arrives in bulk in the hold of a ship. It is pumped from the hold of the ship to tank barges which take it to storage tanks. Some oil from Europe arrives in wooden barrels or drums holding about 400 pounds each. For the use of the Chinese along the Pacific coast and around New York City small lots of peanut oil are received in 5-gallon cans, two cans packed in a wooden case.

Peanut Cake and Peanut Meal

Peanut cake is the solid residue from the crushing of peanuts in the hydraulic press. These slabs of cake range from 26 to 30 and occasionally 33 inches long and are about 14 inches wide and ¾ of an inch thick. The term cake is also applied to the large flakes produced by crushing peanuts in expeller presses. For exporting, the product is left in cake form, but for sale in this country it is generally run through a breaker and the resulting particles of cake, ranging in size from a pea to a hickory nut or larger, are ground into meal of about the consistency of corn meal; though sometimes it is left as it comes from the breaker, in small pieces, for feeding to livestock on the range.

Peanut meal is now sold chiefly to manufacturers of stock feeds. Formerly it was used to some extent as a fertilizer, and still is when the price is low. This is especially true when the meal is darker than usual, as stock-feed manufacturers, accustomed to the yellowish cottonseed meal, prefer a peanut meal as light in color as possible.

Both as a feed for most animals and as a fertilizer, peanut meal is considered to have more value than cottonseed meal; but farmers in

the South have been slow in recognizing this fact. One of the factors limiting the early growth of the peanut-oil industry in the United States was the difficulty experienced by mills in disposing of their peanut cake and meal. Frequently during the early years of the peanut-oil industry, an increased demand for these products on the part of the Southern farmer would have reduced the supplies in the hands of the mills and would have increased the price the mills were willing to pay the grower for his peanuts.

A greatly increased interest in peanut meal on the part of manufacturers of stock feeds in this country has been evident for some years. As the stocks of domestic meal were cut down by the small amount of crushing being done, millions of pounds of imported meal were brought in to supply the demand. Even during the seasons 1934 to 1938, a period when crushings were at new high levels, imports of peanut meal continued. During the calendar year 1937 over 19 million pounds of peanut meal and cake reached the United States from abroad, especially from China, Japan, Italy, and Kwantung, though the following year imports dropped to 6 million pounds.

Stock-feed manufacturers would be more willing to use peanut meal if the supply were more certain. Their printed formulas are prepared months in advance, and to be obliged to change a formula for a certain stock feed in the middle of a busy season because peanut meal is not available, is embarrassing and costly. In 1938 several large manufacturers, who had previously revised their formulas to include peanut meal, revised them again to exclude it, because of the uncertainty of obtaining peanut meal when needed. So long as the crushing of peanuts is confined to mill stock and to poor-quality peanuts not suitable for human consumption, or to an indefinite quantity of peanuts diverted from the regular channels of trade because of an apparent oversupply, the difficulty of interesting manufacturers of stock feeds in peanut meal will continue. Farmers in the vicinity of peanut crushing mills, however, are buying peanut meal in small lots to an increasing extent.

For feeding purposes peanut meal produced in the Southeastern States is usually sold on the basis of 45-percent protein content, though some mills sell a meal of 41-percent protein content. A meal containing from 48 to 51 percent of protein can be obtained from cake made solely from No. 1 Spanish peanut kernels, and a meal of even 62-percent protein content has been produced, but commercially the protein content is reduced to 45 percent by adding sufficient bran (ground hulls) and mixing it with the peanut meal. Peanut meal produced in the Southwestern States is usually sold on the basis of 43-percent protein content. Crushers in Virginia customarily sell peanut meal of 41-percent protein content.

Experiments in feeding peanut meal to various farm animals have been carried on by many State experiment stations. A detailed investigation by the Virginia Agricultural Experiment Station outlining the feeding of peanut meal to dairy cows is summarized (*23, p. 43*) as follows:

> More milk protein was produced from each pound of total crude protein from peanut meal than from either cottonseed or soybean meal protein. It required 3.38 pounds of total crude peanut meal protein to produce one pound of milk protein, maintenance included, and 3.59 pounds for both cottonseed and soybean meals. When considered from the digestible crude protein standpoint the

order of efficiency was peanut meal first, cottonseed meal second, and soybean meal third. The relative gross efficiencies in producing milk protein from total crude protein were: peanut meal 29.6 percent, cottonseed meal 27.8 percent, and soybean meal 27.9 percent. From the digestible crude protein standpoint the efficiencies were: peanut meal 50 percent, cottonseed meal 46 percent, and soybean meal 45 percent.

Yet different results may be obtained in feeding peanut meal to beef cattle, as witness an experiment by the Tennessee Experiment Station, which says (*24*) "Peanut oil meal was somewhat less efficient in producing gains than the other supplements. The cattle fed peanut oil meal had less keen appetite and were off feed more frequently."

In steer-fattening experiments at the Georgia Coastal Plain Experiment Station carried out in cooperation with the Bureau of Animal Industry, peanut meal compared favorably with cottonseed meal as a protein supplement. No difficulty was experienced in feeding peanut meal to the cattle (*16*).

Peanut meal mixes well with cottonseed meal as a feed for fattening cattle. In an investigation carried on by the Georgia Experiment Station (*15*) 30 yearling Hereford steers averaging 470 pounds were divided into 3 comparable groups of 10 each and fed on test for 112 days. One lot received peanut meal, one cottonseed meal, and the third a mixture of equal parts by weight of peanut meal and cottonseed meal. Ground corn and sorghum silage constituted the remainder of the ration. The average daily gain per steer was 1.883 pounds on peanut meal, 1.907 pounds when fed cottonseed meal, and 1.850 pounds on a mixture of the two. Although the average daily gain per steer on the mixture was slightly below that from either meal fed separately, the group that was fed the mixture of the meals graded the highest of all three lots at the close of the test.

Peanut meal is used rather extensively in hog production, especially by southern farmers living within a short trucking distance of crushing mills. Investigations by Hankins and Ellis of the Department (*20, p. 62*), have shown that "shell-free peanut meal is a valuable supplement to corn for fattening hogs."

The proportion of peanut meal used in the diet, however, should be watched to make sure that it is not sufficient to cause soft pork, if that is a matter of concern to the producer. For example, Hankins and Ellis (*20, p. 66*) say that although a "mixture of corn meal 2 parts and peanut meal 1 part fed with or without supplementary minerals cannot be depended on to produce consistently either hard or soft hogs (when finished) under usual conditions," it often does result in soft hogs. Yet, a "mixture of corn meal 5 parts and (hull free) peanut meal 1 part self-fed with or without supplementary minerals to pigs starting at approximately 80 pounds weight and making gains of approximately 100 pounds through a feeding period of from 9 to 10 weeks produces, in the usual case, hard or medium hogs" (*20, p. 57*).

The addition of peanut meal to poultry feed is being studied by many investigators, with encouraging results. Experiments in Virginia (*9*), for example, showed that the mortality of chicks fed peanut meal was less than that of chicks that received meat scrap or meat scrap and milk as the protein supplements; that peanut meal, supplemented with minerals, can be used to replace 50 percent of the meat scrap without affecting the growth of the chicks, and that it can replace 75 percent without affecting growth materially.

More recent investigations by the North Carolina Agricultural Experiment Station (*13*) developed that "high grade peanut meal contains the necessary nutrients which permit replacing at least 50 percent of the more expensive animal protein concentrates in general use in well balanced laying mashes." In the mash used, 62 to 94 percent of the animal protein was replaced by high grade peanut meal without any reduction in egg production, hatchability, or livability of the chicks.

In the Southwest, peanut cake is at times not ground into meal but is left as it comes through the breaker, and the broken cake is sorted into various sizes. This broken cake is in demand by cattle and sheep feeders who spread it on the ranges for the cattle or sheep to eat. As the broken cake is very hard, however, some feeders prefer to buy meal which has been pressed into firm pellets of suitable sizes, using a machine (fig. 43) similar to that used for making cottonseed meal pellets. The larger size pellets are bagged and sold as nut or cow cake, and smaller size pellets are called sheep cake. Pellets of a very small size are known as pea cake and are used for feeding calves and lambs. The cracked cake or pellets can be spread on the grass or on top of the snow without danger of serious trampling, whereas fine meal would have to be fed from a container, but even then it is likely that much would be blown away by the wind and be wasted. Sometimes a long furrow is plowed along the range and the cake or pellets are sprinkled along it to lessen the danger from trampling. While feeding on the ranges the stock obtains the forage needed to go with the concentrated protein cake. Texas farmers say that a ration of 2 pounds of peanut-meal pellets daily per animal, with cured grass, will carry a breeding herd of cattle through the winter in satisfactory condition.

The percentage of peanut oil in peanut cake depends on the amount of pressure exerted and on the length of time the cake remains in the press. Proper cooking is also necessary if a low oil content is to be obtained. Commercially, the oil content usually runs 6 to 8 percent, averaging around 7.

The value of peanut cake as a fertilizer is based on the quantity of nitrogen it contains. A high-grade cake contains sufficient nitrogen to yield 9 percent of ammonia by analysis, and sales of peanut meal for fertilizer are usually made on that basis. Peanut meal not only ranks above cottonseed meal in ammonia and nitrogen content, but contains a small percentage each of available phosphoric acid and soluble potash. Peanut meal has such high food value, however, that feeding it first, and then spreading the resultant manure on the ground is far more economical, at normal price levels, than applying it directly to the ground as a fertilizer.

Peanut Flour

The manufacture of peanut flour from the finer grades of peanut meal, ground from pressed kernels only, was given encouragement during the World War, as it afforded a very satisfactory supplement to wheat flour.

In 1935 and 1936 the Georgia Department of Public Health and the Georgia Agricultural Experiment Station made efforts to popu-

larize peanut flour, because of its value in preventing and correcting the deficiency disease known as pellagra. According to the former (*17*), 7½ ounces per day of peanut meal will relieve all symptoms of a well-developed case of pellagra. The Experiment Station issued a bulletin (*1*) giving a large number of recipes for the use of peanut meal or flour. When the meal from which the flour has been ground is made from cleaned and shelled peanuts, preferably with the skins removed, peanut flour is wholesome, palatable, and nutritious. It

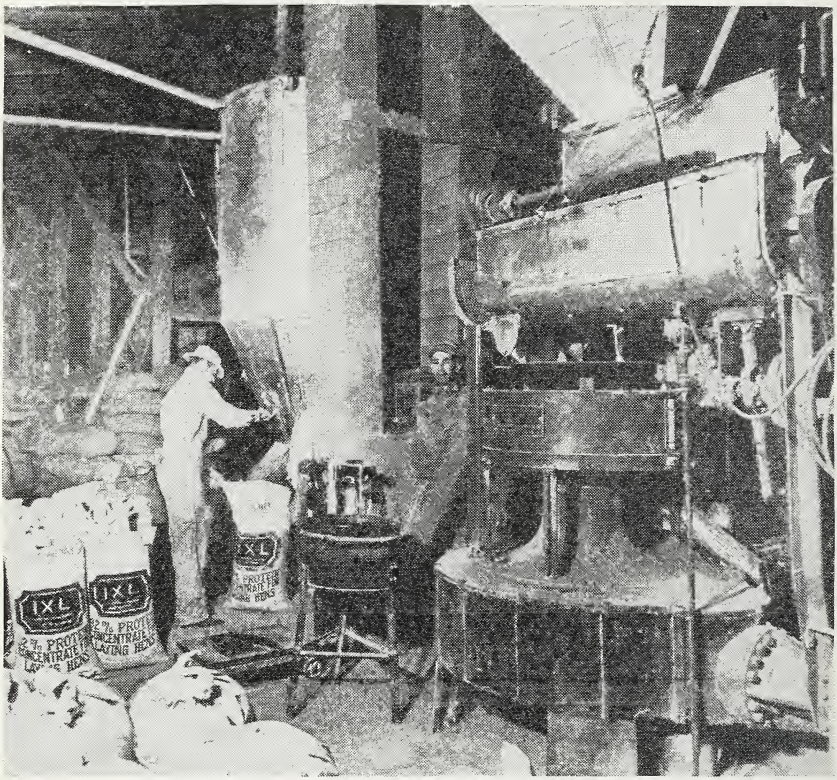


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FIGURE 43.—Pelleting machine in which peanut meal is pressed into pellets of various sizes. This is fed on the ranges the same as cracked cake. In the center of the picture is shown a feed mixer in operation, mixing poultry feeds that contain peanut meal.

contains over four times as much protein, eight times as much fat, and nine times as much mineral ingredients as white wheat flour (*4*).

In making bread with peanut flour it is customary to mix it with wheat flour. According to the Bureau of Home Economics of the Department of Agriculture [18] peanut flour can be used to replace up to 15 or 20 percent of the wheat flour in recipes for quick breads and simple cake without change in the recipe. Beyond this quantity there must be an adjustment made in the quantity of liquid used. Thirty-

[18] PEANUT FLOUR RECIPES. Bur. Home Econ., U. S. Dept. of Agr. 1939. [Unpublished.]

percent replacement is considered about the limit for a satisfactory product.

The peanut oil in the flour lessens the quantity of shortening necessary and gives the bread a rich, nutty flavor. The chief objection to peanut flour is that it may become weevily. Peanut flour was not manufactured to any extent in 1939.

Peanut Hulls

As the presence of large quantities of peanut hulls in or around shelling plants adds materially to the fire hazards, shellers are careful to avoid any accumulation of these stocks. Peanut hulls are used chiefly for fuel, often being blown out of the shelling plant directly into the firebox of the furnace at the mill. A ton of peanut hulls was considered in 1938 to have a value to the miller of about $3 a ton when used for fuel, and three tons of peanut hulls are estimated to equal 1 ton of coal in fuel value.

A ton of farmers' stock Spanish contains from about 475 to 550 pounds of hulls; a ton of Runners from about 550 to 600 pounds; and a ton of Virginias from around 650 to 750 pounds of hulls. These figures will vary with the season and with the proportion of pops in the crop.

As peanut hulls consist chiefly of crude fiber, they have little food value in themselves, but ground hulls or hull bran is frequently bought by stock feed manufacturers for use as a filler. Several southwestern firms mix ground hulls and molasses, in the proportion of 80 percent of hulls and 20 of molasses, with sometimes a little salt added, and sell the product in 100-pound bags as molasses feed for cattle. The feed has a protein content of 6 to 7 percent. A mixed feed manufactured in the Southwest consists of 55 percent of ground peanut hulls, 20 of molasses, and 25 of whole-pressed peanut screenings of 40-percent protein content. Packed in 100-pound bags it has a guaranteed analysis of 15 percent of protein content. Some poultry feeds contain ground peanut hulls.

In the Southeast many tons of hull bran are fed back into the machines that grind peanut cake into meal, to reduce the protein content of the meal. Large quantities of peanut hull bran are used as a filler in fertilizers. Many carloads of hulls are shipped to northern stables for use as bedding.

Experiments have been under way looking to the utilization of peanut hulls in floor-sweeping compounds, and in the manufacture of linoleum, and some goes into the manufacture of dynamite. One firm makes an insulation block from peanut shells, using an asphalt binder. Floor-sweeping compounds made principally from peanut hulls are being sold commercially.

Some attempts have been made to use ground peanut hulls in the preparation of magnesia tiles and plaster. The Department of Agriculture has made a study of peanut hull cellulose, and experimental work shows that peanut hulls contain a large quantity of cellulose which can be extracted from the hulls by the use of common soda, the sulfate, or the neutral sulfite method (*28, pp. 1865, 1868*).

In 1917 the Forest Products Laboratory of the Forest Service of the United States Department of Agriculture, located at Madison, Wis.,

carried on a number of experiments to determine the suitability of peanut hulls for use in the manufacture of paper board. In the most satisfactory tests that were run the board was composed of equal quantities by weight of disintegrated peanut hulls and old newspapers. The Laboratory stated that the board produced as a result of the experiments was practically as good as many samples of chip board or wallboard stock then on the market. If the supply of peanut hulls is adequate and very close to a mill that manufactures cheap pulp products, investigators of the Forest Products Laboratory reported, the manufacture of a cheap grade of board offers a favorable opportunity for the disposal of the hulls. Other experimenters also have shown that a satisfactory cheap wallboard or cardboard can be made from peanut hulls.

Peanut Hay

Peanut hay usually consists of the cured peanut plant, roots and all, after the pods have been removed, leaving only occasional sappy nuts. Rarely, the tops of peanut plants are cut and treated like alfalfa hay, the pods being hogged-off. In noncommercial areas the whole peanut plant, pods and all, is sometimes used for hay.

When properly cured, peanut hay is considered particularly valuable for feeding dairy cows, though it is also thought of highly for feeding horses and mules. The quality of the hay is determined by the manner in which the crop is handled. If the peanuts are cured in windrows, as is customary in Texas and in some of the southernmost portions of the southeastern peanut belt, the leaves tend to turn black and drop off, greatly lessening the feeding value of the hay. On the other hand, when the vines are placed in stacks the cured hay is brighter in color and of high nutritive content. The North Carolina Experiment Station (*30, p. 47*) has stated "Good peanut hay is of equal or slightly greater value than an equal quantity of soybean hay. It is of sufficient value as a legume hay for milk and butterfat production to justify greater care in harvesting and storing than it usually receives."

The chief objection to peanut hay as a stock feed is that it occasionally contains much sand or soil, as a result of careless picking. This should be removed before feeding, as stock may be injured by eating extremely dirty or dusty hay.

An experiment was conducted recently by the Georgia Agricultural Experiment Station (*15*) primarily to determine the comparative feeding value of sorghum silage and Spanish peanut hay as roughages for feeding beef cattle. This test covered 112 days and was carried on with 4 comparable groups of Hereford steers, 10 in each group, with an average weight of 470 pounds. A grain ration of ground corn and cottonseed meal was fed to each. One group of the cattle was also fed ground peanut hay, another sorghum silage, the third cottonseed hulls, and the last unground peanut hay. Salt and mineral mixtures were kept available to the animals at all times. The steers fed ground peanut hay gave the highest average daily gain per steer and the lowest average feed cost per pound. They also graded the highest of the four lots at the close of the experiment.

Peanut hay is largely sold in local or nearby markets, little being shipped to cities at a distance.

Ground peanut hay is sold in bags of 100 pounds net, and when required by State law carries an analysis tag. The minimum crude protein guaranteed is usually 9 or 10 percent, the crude fat not less than 3 or 3.50 percent, and the maximum crude fibre 24 or 25 percent.

Occasionally ground peanut hay appears as one of the components of a dairy feed. A southwestern peanut firm, for example, manufactures a dairy feed consisting of 35 percent of peanut hay, 24 of wheat bran, 20 of cottonseed meal, 20 of snapped corn, and 1 percent of salt. It is sold in 100-pound bags.

Peanut stems removed during the cleaning process in the mills are sometimes ground and sold in 100-pound bags. The analysis on some bags contains a guarantee of 9 percent of crude protein, 0.8 percent of crude fat, and 40 percent of crude fiber.

Other Byproducts

Any peanut byproduct for which a more valuable use cannot be devised, can be used in the preparation of stock feed. Shriveled, broken, undersized peanuts rejected from cleaning mills are excellent for chicken feed. The seed germs removed in the process of blanching peanuts for peanut butter, and broken pieces of nuts, have been used in the manufacture of pigeon or squab feed.

Investigators have developed from peanuts a large number of products that have not reached the commercial stage. Peanut milk, peanut ice cream, peanut massage oil for infantile paralysis treatment, peanut dyes, and peanut paints are among the more commonly mentioned of these products.

PEANUTS AS A FEED FOR HOGS

It is only since the coming of the boll weevil forced southern farmers to look for other crops to supplement or take the place of cotton that peanuts have been planted commercially to any extent outside the States of Virginia, North Carolina, and Tennessee for purposes other than hogging-off or grazing. And during recent years the harvesting of peanuts by hogs has continued to be of greater importance than is often realized. According to estimates of the Department of Agriculture, during each of the years 1932 through 1940, over 1 million acres were planted in the South which farmers did not expect to dig for the nuts, but which were intended to be hogged-off. The practice of harvesting peanuts by hogs is especially important in the Southeastern States, where the acreage planted for this purpose has for many years been nearly equal to that grown for picking or threshing.

In sections where peanuts are intended for forage purposes they are usually planted between rows of corn. When the corn has been harvested cattle are turned in to eat the fodder and vines while hogs root out the peanuts. The combination of cattle and hogs is also an excellent method for disposing of the crop when peanuts are planted alone for fodder. This method of harvesting is practicable only when the farms are properly fenced. When peanuts are hogged-off, most of the nitrogen that is stored in nodules on the roots remains in the soil.

Each year a varying acreage is planted from which growers do not know in advance whether the peanuts will be hogged-off or dug and picked for the nuts. By comparing the relative prices paid for peanuts and hogs and taking into consideration the cost of harvesting and picking the peanuts, a farmer can determine at the time of harvest whether or not it will pay him to dig his crop for the nuts.

Hogs are often turned into the peanut fields after harvesting to clean up the pods left in the ground. When the Spanish variety is dug at the proper time the quantity of pods to be obtained in this way is so small as to render the practice unprofitable. If Spanish peanuts are left too long before harvesting, however, many pods will break off and remain in the ground. Hogs can obtain considerable feed from fields where Virginia-type peanuts have been grown; and so many Georgia Runner peanuts pull free from the vines when they are being dug that hogs can be turned with profit into the fields after the Runner crop has been harvested.

Peanut-fed pork and pork products are usually of a softer texture than corn-fed, and for this reason hogs fed chiefly on peanuts usually sell for a somewhat lower price than corn-fed hogs. Nevertheless, hams from hogs fed mainly on peanuts, though later hardened off on less fattening products such as corn, have become popular in several sections, and many consider that they have a better flavor than hams from hogs fed strictly on corn. Although the demand for hams from peanut-fed hogs is limited, those from certain areas in Virginia and Georgia command a substantial premium over the corn-fed product.

Experiments on the use of peanuts as a food for hogs have been carried on by the United States Department of Agriculture and by several State experiment stations. A preliminary summary of the Federal investigation (*21*) says, "Although in fattening hogs peanuts promote moderately rapid gains with low feed consumption per unit of gain, the experiments indicate the value of a protein supplement when peanuts are fed to growing pigs."

On the other hand, the results of a 6-year study at the North Carolina Experiment Station (*19, p. 27*) "show that alfalfa meal and mineral mixture are the only additional feeds necessary to produce satisfactory daily gains and that there is an economical consumption of peanuts per unit of gain, when fed to pigs of average initial weights of 35 to 60 pounds. * * * The protein and other nutrients in a ration consisting of shelled peanuts, mineral mixture and alfalfa meal are adequate for growth in the pig and when the mineral and vitamin requirements in a ration of peanuts are supplied animal proteins do not appear to be necessary. The vitamin A supplied in these rations could be obtained under field conditions by the use of a green grazing crop."

In a later Federal study (*14, p. 13*), during which "two groups of hogs averaging approximately 100 pounds and 40 pounds in initial weights, were compared in a study of the quantitative relationship of storage of fat to firmness as influenced by the use of peanuts and of corn in successive feeding periods, a higher rate of fat storage prevailed during the period that hogs were on the peanut ration than when they were on the corn ration." It is interesting to note that "the group of hogs which averaged 100 pounds at the beginning of the experiment

stored the oily fat at a somewhat more rapid rate than the group which averaged 40 pounds at the beginning of the experiment. The addition of hard fat, formed from the non-fatty constituents of the hardening ration, to the oil fat already formed during the peanut feeding period produced a gradual hardening of the body fat as a whole." Generally speaking, it appears that hogs fed mainly on peanuts during their early stages of growth, and later fed hardening rations on which the gains are approximately five times those made on peanuts, should usually produce pork of satisfactory firmness so that they should receive little or no price discount when sold.

FOREIGN PRODUCTION OF PEANUTS

The United States is not the leading peanut-producing country. British India, with crops ranging from 4 to 8 billion pounds, is the largest commercial producer. Although in recent years, at least until the Japanese invasion, China is reported to have produced about the same volume of peanuts as India, India has been the heavier exporter. France imports more peanuts than any other one country, mostly to crush for peanut oil.

A relatively small area in Africa, centering in Senegal, Gambia, French Sudan, and the Ivory Coast, produces over 2 billion pounds of peanuts, most of which are exported. Senegal alone grows about as many peanuts as are picked and threshed in the United States, and exports most of them. As is seen in table 5, the world production totals at least 15 to 21 billion pounds.

TABLE 5.—*Production or exports of peanuts in specified countries, and estimated world total average 1928–31, annual 1932–38*

[Exports indicated by asterisk *]

Principal countries	Average, 1928–31	1932	1933	1934	1935	1936	1937	1938
	Million pounds	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*
Asia:								
British India [1]	5,698	6,713	7,459	4,221	5,058	6,402	8,299	7,562
China			6,571	5,831	4,957	5,801	6,763	
Japanese Empire [2]	254	292	306	327	326	339	375	
Indo-China and French India	40	39	32	39	42	45		
Africa (also see below):								
Senegal	951	1,087	1,257	1,036	1,257	1,332	1,144	1,069
French Sudan [3]	194	274	224	248	265	295	172	271
Ivory Coast [3]	190	56	110	91	87			
Other French West [3 4]	223	175	188	246	317	371	401	
Nigeria [5]	*468	*632	*687	*823	*618	*732	*1,095	*605
Gambia	*153	*84	*151	*161	*101	*118	*151	*106
Egypt and Anglo-Egyptian Sudan	58	65	38	37	45	45	51	53
Other Africa [6]	60	45	68	66	44	68	58	74
Philippine Islands [7]	10	10	9	8	7	8	12	12
North America:								
United States [8]	874	941	820	1,010	1,147	1,253	1,224	1,306
Mexico	12	11	11	16	18	21	24	26
Europe:								
Spain	55	45	47	47	47			
Other [9]	*3	7	6	4	7	6	10	8

[1] Includes Burma. [2] Includes Kwantung, Taiwan, Chosen, and Japan proper. Does not include Manchuria. [3] Upper Volta included with Ivory Coast, 1930–32; divided between Ivory Coast, Niger, and French Sudan, 1933. [4] Includes Niger, French Cameroon, French Equatorial Africa, Dahomey, French Guinea, Dakar, French Togoland, and Mauritania. [5] Includes Cameroon which is attached to Nigeria for administrative purposes. Exports from Cameroon not separately reported since 1925. [6] Includes Portuguese Guinea, Italian Somaliland, Eritrea, Kenya, and Sierra Leone. [7] Years ended June 30. [8] Picked and threshed. [9] Includes Bulgaria, Italy, and Turkey. 1934–38 include Bulgaria and Italy only.

TABLE 5.—*Production or exports of peanuts in specified countries, and estimated world total average 1928–31, annual 1932–38*—Continued

Principal countries	Average, 1928–29 to 1931–32	1932–33	1933–34	1934–35	1935–36	1936–37	1937–38	1938–39
	Million pounds	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*
South America:								
Argentina	131	173	229	205	250	175	153	100
Other [10]	20	21	21	2	2	1	2	3
Africa:								
Belgian Congo [11]	234	242	248	254	270			
Mozambique	*90	*110	*45	*82	*101	*124	*87	*42
British South [12]	71	78	92	69	97	117	93	106
Angola	15	17	65	13	12	10	11	16
Madagascar	18	14	6	5	6	14	18	
Oceania:								
Netherlands Indies [13]	518	534	507	471	453	525	570	636
Australia	6	2	3	10	10	18	12	
Estimated total:								
Including China			19,199	15,322	15,524	18,208	21,157	
Excluding China and U. S. S. R.	10,346	11,667	12,628	9,491	10,567	12,407	14,394	13,101

[10] Includes Paraguay and Uruguay. 1934–38 include Uruguay only. [11] Includes the Belgian mandate Ruanda-Urundi for 1930–32 and probably for all years but source data are not clear. [12] Includes Tanganyika, Union of South Africa, Northern Rhodesia, Southern Rhodesia, Nyasaland (European plantation crops only as native crops are not reported), and Mauritius. [13] Native crops only of Java and Madura.

Compiled from official sources and International Institute of Agriculture. Figures rounded to millions without adjustment of total. Estimated totals include figures for some countries not shown. (Revisions included up to June 25, 1941.)

IMPORTS OF PEANUTS AND PEANUT OIL

Imports of peanuts were unimportant from 1931 to 1938. But earlier in the present century imports were often heavy. Even as far back as the year ending June 30, 1910, the net equivalent (general imports minus re-exports) of 35 million pounds of peanuts in the shell, converting shelled peanuts to unshelled on the basis of 3 pounds of unshelled to 2 pounds of shelled, were brought into the United States, chiefly from Spain, France, and Japan. Receipts reached their highest point during the 12 months ending June 30, 1920, when the net equivalent of 192 million pounds of peanuts in the shell were imported, most of them grown in China (*12, pp. 79–84*) though many had been reexported through Japan. Over 90 percent of these imported peanuts were in the shelled form.

In addition to the peanuts, 165 million pounds of peanut oil were imported during the fiscal year 1920, mostly from the Orient. This oil was the equivalent of 2,750 carloads of 60,000 pounds each, and required the crushing abroad of from three to four times as many peanuts as were actually shipped here. In no fiscal year since then have imports of peanut oil exceeded 67 million pounds, and they have often been below 10 million pounds a year. Import statistics for peanuts, and imports of peanut oil, for the years 1925 to 1939, are given in detail in table 6, pages 109 and 110 and in table 7, pages 110 and 111. Table 8, pages 111 and 112 gives details of the international trade in peanut oil for a number of years.

TABLE 6.—*Imports of peanuts into the United States by countries of origin, for calendar years 1925–39. General imports are shown for years 1925–30; imports for consumption, 1931–39*

Country	1925		1926		1927	
	Shelled	Unshelled	Shelled	Unshelled	Shelled	Unshelled
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
France			200,000	264	4,125	
Germany			397,157		159,110	
Italy	66,900	40		32,340		
Rumania	200,000					
Spain	106,450	182,294		183,447		32,254
Canada	128,685	343,100	224,405		227,636	27,285
Dutch West Indies		53,106		6,315		
Ceylon	174,000					
China	72,045,624	8,285,464	40,966,712	3,251,110	36,777,688	4,091,655
Java and Madura	303,438				371,497	
Japan	56,490	1,535,545	115,317	255,661	267,372	239,638
Hong Kong	32,418	53,003	11,255	50,103	17,949	51,519
Kwantung	10,000		672,000	100,170	960,000	
Other French Africa				110,230		
Other countries	11,000	4,405	2,756	295	19,354	47,833
Total	73,134,105	10,456,957	42,589,602	3,989,935	38,804,731	4,490,184
Net equivalent, peanuts in shell [1]	120,158,114		67,874,338		62,697,281	
Re-exports, shelled and not shelled	4,728,948		4,856,662		8,422,151	

Country	1928		1929		1930	
	Shelled	Unshelled	Shelled	Unshelled	Shelled	Unshelled
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
France		220				
Germany	8,412					
Spain	220,220	139,071		59,904		118,498
Canada	2,577,905	366,600	621,588	259,400	100,313	17,200
China	51,319,149	12,565,483	23,978,330	3,644,455	3,642,686	2,655,907
Japan	110,960	507,218	328,375	314,860	2,961	232,200
Hong Kong	10,631	54,722	53,882	123,277	13,012	84,101
Kwantung	1,614,994	100,000	1,645,200	200,000	499,000	110,000
Philippine Islands					864,596	
Other countries		5,920	3,700	6,861	52	155
Total	55,862,271	13,739,234	26,631,075	4,608,757	5,122,620	3,218,061
Net equivalent, peanuts in shell	97,532,641		44,555,370		10,901,991	
Re-exports, shelled and not shelled	3,457,368		2,853,623		1,800,999	

Country	1931		1932		1933	
	Shelled	Unshelled	Shelled	Unshelled	Shelled	Unshelled
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
Canada	17,800			600	50	
China	892,746	2,360,675	88,076	182,505	7,553	14,121
Japan	1,688	303,805	388	136,340	1,208	113,840
Hong Kong	29,595	150,874	9,971	160,071	9,472	65,036
Kwantung		100,347				
Philippine Islands	920,655		22,701		580	
Other countries	1,000	1,200				
Total	1,863,484	2,916,901	121,136	479,516	18,863	192,997
Net equivalent, peanuts in shell	5,712,127		661,220		221,292	
Re-exports, shelled and not shelled	3,080,481		457,148		109,303	

[1] Conversion made on basis of 1 pound shelled peanuts as equivalent to 1½ pounds of peanuts in the shell.

TABLE 6.—*Imports of peanuts into the United States by countries of origin, for calendar years 1925–39. General imports are shown for years 1925–30; imports for consumption, 1931–39*—Continued

Country	1934		1935		1936	
	Shelled	Unshelled	Shelled	Unhselled	Shelled	Unshelled
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
Canada	265	29,500	785	5,000		
China	7,430	116,134	2,250	3,687	5,660	70,870
Japan	472	135,400	1,018	121,750	2,200	140,000
Hong Kong	12,111	64,160	27,407	31,670	25,780	47,277
Kwantung				70,000		
Philippine Islands	240,000	374	1,205		46,425	52,706
Other countries		6,275		1,132		992
Total	260,278	351,843	32,665	233,239	80,065	311,845
Net equivalent, peanuts in shell	742,260		282,236		431,942	

Country	1937		1938		1939	
	Shelled	Unshelled	Shelled	Unshelled	Shelled	Unshelled
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
British India		3,809	[2] 2,472,690	2,052		
China	9,002	4,130	12,031	70,515	463,654	155,657
Japan	3,166	285,570	1,580	189,763	578	128,360
Hong Kong	29,046	135,057	10,104	25,630	4,034	35,903
Philippine Islands	1,221,677	366,033	3,695,832	155,211	6,393,809	12,371
Other countries		1,693		199		
Total	1,262,891	796,292	6,192,237	443,370	6,862,075	332,291
Net equivalent, peanuts in shell	2,690,629		9,731,725		10,625,403	

[2] Includes 2,247,900 pounds free for export.

TABLE 7.—*Imports of peanut oil into the United States by countries of origin, for calendar years 1925–39. General imports for 1925–30, imports for consumption 1931–39*

Country	1925	1926	1927	1928	1929	1930	1931
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
France	728,818	899,944	825,574	553,102	176,294	43,323	40,330
Germany	55,279	1,180		1,302,766	1,278,740		
Netherlands	86,453	103,594	169,115	111,613	173,939	188,385	209,041
United Kingdom			39,669		20,502		
Canada		44,034	119,461			1,652	19,847
China	572,403	5,372,934	77,244	1,492,316	144,531	13,811,413	2,098,030
Japan	7,996	7,576	88,011	14,252	6,120	35,037	
Hong Kong	1,503,574	1,738,002	1,528,350	1,274,769	1,429,621	1,485,660	1,556,115
Kwantung	28,500	114,000					
Other countries	43,927				946		
Total	3,026,950	8,281,264	2,847,424	4,748,818	3,230,693	15,565,470	3,923,363
Re-exports	339,756	318,841	897,527	42,371	102,710	33,436	
Net imports	2,687,194	7,962,423	1,949,897	4,706,447	3,127,983	15,532,034	

TABLE 7.—*Imports of peanut oil into the United States by countries of origin, for calendar years 1925–39. General imports for 1925–30, imports for consumption 1931–39*—Continued

Country	1932	1933	1934	1935	1936	1937	1938	1939
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
France	6,036		4,299			2,570	262	
Germany				1,343,924				
Netherlands	146,073	100,751	1,442,122	42,818,514	11,111,889	28,001,850	6,576,444	322,335
Netherlands (free for export)						3,468,818		
United Kingdom				1,599,950	3,484,017	714,592	18,037	
Canada	96		2,716			7,037		
Cuba					129,716			
China	161,254	14,274	83,790	32,935,611	33,007,751	22,700,828	7,473,672	2,900,023
Japan	3,600		1,457	731,453	1,680	4,650	1,155,265	123,710
Hong Kong	1,194,111	1,207,392	1,187,999	1,293,663	1,271,068	1,823,261	329,412	430,692
Kwantung (free for export)						1,275,718		
Other countries		209		110	110	122	303	2,655
Total	1,511,170	1,322,626	2,722,383	80,723,225	49,006,231	57,999,446	15,553,395	3,779,415

TABLE 8—*International trade in peanut oil, average 1925–29, 1930–34; and 1935 through 1939, calendar years*

Country	Average, 1925–29		Average, 1930–34		1935		1936	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
	1,000 pounds	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
Principal exporting countries:								
France	70,810	10,793	91,764	10,075	82,831	1,370	83,332	2,102
China	70,538		69,267		85,089		68,582	
Netherlands	31,567	58,871	44,206	9,515	97,857	1,602	64,676	4,332
United Kingdom	21,326	37,167	6,464	25,231	30,206	20,882	38,284	15,408
Netherlands Indies	4,262	1,676	8,106	2,018	10,919	1,103	15,927	981
Denmark	4,046	1,203	13,590	1,205	18,732	237	15,190	4
Manchuria	(1)	(1)	[2] 250		24		5	
Total	202,549	109,710	233,647	48,044	325,658	25,194	285,996	22,827
Principal importing countries:								
Algeria	364	29,372	831	59,541	123	53,732	56	54,098
British Malaya	2,450	26,777	2,704	24,547	2,438	15,476	2,101	19,533
Canada		20,992		43,506		61,974		64,738
Italy	114	13,388	79	695		1,097	1	1
Belgium	4,358	9,717	2,608	18,689	2,985	11,457	4,860	12,908
Germany	58,861	8,040	45,217	1,929	2,642	140	320	804
Norway		7,782	346	2,359	544	1,284	424	1,061
Sweden	2,177	7,275	768	7,135	533	4,767	601	6,375
United States		4,427		7,196		80,723		49,006
Tunisia		4,283		3,234		1,379		6,924
Philippine Islands		4,163		3,856		776		800
Czechoslovakia	386	3,360	391	6,544		2,237		4,194
Finland		2,367		1,384		660		681
Morocco		1,878		6,582		6,099		7,990
Guadeloupe [3]	[4] 1	[4] 1,310	7	2,530		1,759	9	1,777
Martinique [3]	[5] 162	499	9	4,233		1,772		2,901
Madagascar	[6] 18	[6] 437	35	637	86	723	70	641
Total	68,891	146,067	52,995	194,597	9,351	246,055	8,442	234,432

[1] Not shown prior to 1932; included in data for China.
[2] 3-year average.
[3] International Yearbook of Agricultural Statistics.
[4] 4-year average.
[5] 2-year average.
[6] Includes a small quantity of sesame oil.

TABLE 8.—*International trade in peanut oil, average 1925–29, 1930–34; and 1935 through 1939, calendar years*—Continued

Country	1937		1938		1939 [7]	
	Exports	Imports	Exports	Imports	Exports	Imports
Principal exporting countries:	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
France	118,612	2,726	117,240	6,757		
China	914		53,465		62,212	
Netherlands	102,753	4,479	98,114	308	100,082	4,599
United Kingdom	57,449	15,147	84,125	6,237	30,939	
Netherlands Indies	20,100	960	22,776	947	31,581	772
Denmark	24,698	17	19,888	2	16,310	444
Manchuria	3,522					
Total	328,048	23,329	395,608	14,251	241,124	5,815
Principal importing countries:						
Algeria	369	65,115	80	68,071		
British Malaya	2,587	22,096	2,805	24,424	[3] 3,483	[3] 21,537
Canada		77,912		102,588		42,462
Italy	1,306	703	2	750		
Belgium	3,136	14,272	5,413	17,094	6,271	10,012
Germany	737	2,420	[5] 1,912	[8] 41,450		
Norway	1,179	1,293	306	1,278	145	1,820
Sweden	1,443	7,880	2,993	15,185		
United States		57,999		15,553	[9] 325	3,779
Tunisia		26,238		23,317		
Philippine Islands		1,480		918		[4] 1,036
Czechoslovakia		3,313		[5] 4,608	[10]	[10]
Finland		1,020		2,668		[4] 2,108
Morocco		[3] 14,971		[4] 24,037		
Guadeloupe [3]	13	1,612		2,553		
Martinique [3]		3,463		4,206		
Madagascar	164	569	99	577		
Total	10,939	302,356	13,610	349,277	10,224	82,754

[3] International Yearbook of Agricultural Statistics.
[7] Preliminary.
[8] Beginning April 1938, trade between Germany and Austria no longer reported as foreign trade in the German statistics. The same applies to trade between Germany and Sudetenland (Czechoslovakia) for the period October–December 1938.
[9] Not separately reported prior to 1939.
[10] 1938 latest data available.

Compiled from official sources except as otherwise stated. Conversions made on the basis of 7.5 pounds to the gallon.

TARIFF RATES

The lessened imports since 1920 have been partly the result of the increase in the tariff rates. Prior to the emergency tariff act of May 27, 1921, which included a duty of 3 cents a pound on peanuts, shelled and unshelled, and 26 cents a gallon on peanut oil, the duties were ⅜ of a cent a pound on unshelled and ¾ of a cent a pound on shelled peanuts, and 6 cents a gallon on peanut oil. On September 21, 1922, the tariff on both shelled peanuts and peanut oil was raised to 4 cents a pound; leaving unshelled peanuts at 3 cents. The next increase was by Presidential proclamation, effective February 18, 1929, when the duty on unshelled peanuts became 4¼ cents a pound and that on shelled peanuts 6 cents. The tariff act of June 18, 1930, further increased the rate on shelled peanuts to 7 cents a pound, the unshelled duty remaining 4¼ cents a pound, and the rate on peanut oil 4 cents a pound.

Imports of both peanuts and peanut oil have fluctuated widely, not only as a result of tariff changes but because of economic and price fluctuations and irregularities of supply. During the fiscal years

1935 to 1938, for example, peanut-oil imports were heavier than since 1920 because of a shortage of vegetable oils in the United States.

In 1938 and 1939 receipts at Pacific Coast ports of duty-free peanuts from the Philippines were relatively heavy because local manufacturers found them suitable for making peanut butter, and they were available at prices below those prevailing for domestic nuts.

EXPORTS OF PEANUTS AND PEANUT OIL

Exports of peanuts were formerly more important than they have been during recent years. During the 12 months ending June 30, 1906, the first year for which statistics are available, over 7 million pounds of peanuts were shipped from the United States. In the fiscal year 1917, 22 million pounds of peanuts were shipped abroad, and for the next 5 years exports exceeded 12 million pounds a year. After that, exports gradually decreased, and though, because of low prices in the United States exports exceeded 5 million pounds during the fiscal year 1933, they have recently been less than a million pounds a year. Cuba, Canada, Mexico, and Panama are the principal importers of the few shipments of peanuts that now leave this country. Export statistics for peanuts for the years 1925 through 1939 appear in detail in table 9.

Exports of domestic peanut oil were about 5 million pounds during the fiscal year 1920, the first year for which records are available. They soon fell off and from 1924 to 1939 were so light that they were not tabulated by the Bureau of Foreign and Domestic Commerce. Although they are again being tabulated, peanut oil exports are still almost negligible.

TABLE 9.—*Exports of domestic peanuts from the United States, by countries of destination, for calendar years 1925–39*

[Shelled and unshelled grouped together]

Country	1925	1926	1927	1928	1929	1930	1931
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
France		1,315	162,910		65,610		504
Germany		2,131	3,327	30,000		2,040	
Netherlands		2,770	110,242		33,167		
Union of Soviet Socialist Republics	359			4,000		102,731	198,600
United Kingdom	27,946	930	8,945	937	23,153	56,859	1,289
Canada	3,109,827	3,655,425	4,006,040	4,771,113	4,145,991	2,366,277	1,320,900
British Honduras	24,076	32,893	38,280	27,161	28,551	28,082	24,678
Nicaragua	16,900	12,401	22,123	39,536	35,092	27,468	16,072
Panama	64,238	42,558	87,236	38,408	78,906	62,532	67,716
Mexico	27,301	31,345	21,160	31,098	31,661	25,042	46,623
Newfoundland and Labrador	16,053	27,234	22,700	24,869	30,923	28,993	20,158
Bermuda	18,205	35,575	39,757	18,305	14,193	10,559	9,756
Jamaica	19,630	48,220	10,527	40,147	71,287	32,500	1,848
Other British West Indies	29,062	49,712	67,181	49,795	88,471	46,900	31,638
Cuba	70,333	79,756	112,983	201,253	73,373	22,464	47,451
Netherland West Indies				77	1,302	38,578	2,216
Virgin Islands of the United States	24,262	22,183	27,454	35,845	40,584	24,931	18,285
Argentina	1,000	100,625					
British Guiana		12,500	7,500	4,010	32,600	15,962	
Japan				33,102			
Other countries	39,498	74,559	79,123	69,521	85,174	67,615	33,917
Total	3,488,690	4,232,132	4,827,488	5,419,177	4,880,038	2,959,533	1,841,651

TABLE 9.—*Exports of domestic peanuts from the United States, by countries of destination, for calendar years 1925–39*—Continued

Country	1932	1933	1934	1935	1936	1937	1938	1939
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
France	228, 908	1, 480				600		120
Germany	504, 482	2, 624	180	80	270	24		
Netherlands	222, 559							
Union of Soviet Socialist Republics						112		
United Kingdom	294, 208	28, 261	943	9, 937	47, 500	110	7, 500	
Canada	5, 421, 225	999, 265	423, 763	111, 819	111, 244	86, 928	160, 262	195. 999
British Honduras	30, 888	69, 396	19, 192	262	718	299	480	3, 191
Nicaragua	5, 954	5, 753	6, 633	3, 633	1, 063	609	521	695
Panama	41, 795	63, 977	40, 881	33, 051	24, 374	31, 322	44, 533	60, 095
Mexico	8, 718	23, 275	4, 892	7, 178	2, 230	9, 467	6, 852	5, 150
Newfoundland and Labrador	15, 006	13, 251	15, 668	17, 438	13, 912	16, 783	22, 573	20, 495
Bermuda	14, 489	11, 466	11, 741	8, 224	11, 602	11, 694	24, 901	18, 528
Jamaica	41, 365	25, 160	1, 631	210	664	108	1, 880	3, 195
Other British West Indies	22, 915	8, 795	11, 907	5, 484	8, 097	12, 034	6, 028	15, 368
Cuba	196, 543	120, 320	5, 819	3, 024	4, 508	206, 688	304, 805	350, 150
Netherland West Indies	6, 872	4, 962	7, 017	7, 243	11, 583	16, 054	17, 913	28, 337
Virgin Islands of the United States	17, 067	21, 809	25, 272					
British Guiana	680							12, 500
Other countries	32. 945	26, 041	40, 186	18, 606	18, 478	14, 352	20, 904	35, 962
Total	7, 106, 619	1, 425, 835	615, 725	226, 189	256, 243	407, 184	619, 152	749, 785

DISTRIBUTION OF AMERICAN-GROWN PEANUTS AND PEANUT OIL

Table 10 shows the shipments of cleaned (unshelled) and shelled peanuts for the 1934–35 season, by sections of origin and States of destination; and table 11 shows the original destinations of these shipments of peanuts for all points receiving 20 or more carlots, except for 6 points which were omitted to avoid revealing the business of individual firms. These tables are based upon weekly shipment records received from 160 freight agents and steamship officials, covering all points in the South where cleaning or shelling plants were then located, and on monthly reports from about 70 millers in the peanut-producing areas, covering their shipments by truck, and edited and tabulated by the United States Department of Agriculture.

As a very large volume of peanuts move in less than carlots, the figures were reduced to approximate carlot equivalents, on the basis of 25,000 pounds for a car of cleaned peanuts, 28,000 pounds for a car of shelled peanuts from the Virginia-North Carolina section, and 30,000 pounds for cars of shelled peanuts from the other two sections, except that for rail shipments out of the Southwest 36,000 pounds was taken as the carlot equivalent.

TABLE 10.—*Distribution by States of destination of shipments of shelled and unshelled peanuts, total rail, boat, and motortruck,[1] expressed in carlot equivalents, from 3 leading producing sections as shown by original billings, 1934–35 season*

State of destination	Virginia–North Carolina [2]			Southeastern [3]	Southwestern [4]	Total all sections		
	Shelled	Unshelled	Total	Shelled	Shelled	Shelled	Unshelled	Shelled and unshelled
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Alabama		11	11	85		85	11	96
Arkansas				5	1	6		6
California	332	109	441	106	80	518	109	627
Colorado	23	20	43		38	61	20	81
Connecticut	9	19	28	1		10	19	29
District of Columbia	57	17	74	3		60	17	77
Florida	2	93	95	23		25	93	118
Georgia	22	40	62	221		243	40	283
Idaho		5	5		1	1	5	6
Illinois	849	67	916	1,310	13	2,172	67	2,239
Indiana	296	32	328	144		440	32	472
Iowa	48	53	101	75	5	125	53	181
Kansas	2	20	22	6	5	13	20	33
Kentucky	19	12	31	35		54	12	66
Louisiana	7	31	38	14	6	27	31	58
Maine	9	6	15			9	6	15
Maryland	24	84	108			24	84	108
Massachusetts	371	71	442	222		593	71	664
Michigan	161	88	249	64		225	88	313
Minnesota	118	118	236	86	9	213	118	331
Mississippi		7	7	6		6	7	13
Missouri	161	67	228	330	40	531	67	598
Montana		10	10				10	10
Nebraska	11	31	42	58	4	73	31	104
New Jersey	71	57	128	5		76	57	133
New York	908	266	1,174	428		1,336	266	1,602
North Carolina	32	20	52	51		83	20	103
North Dakota		9	9				9	9
Ohio	616	110	726	506		1,122	110	1,232
Oklahoma		8	8	3	30	33	8	41
Oregon	27	23	50	19	21	67	23	90
Pennsylvania	784	278	1,062	463		1,247	278	1,525
Rhode Island	9	18	27	4		13	18	31
South Carolina	9	24	33	15		24	24	48
South Dakota		12	12				12	12
Tennessee	19	16	35	73		92	16	108
Texas	17	61	78	17	58	92	61	153
Utah	4	17	21		13	17	17	34
Virginia	244	43	287	29		273	43	316
Washington	72	41	113	49	19	140	41	181
West Virginia	6	14	20			6	14	20
Wisconsin	109	106	215	55	1	165	106	271
Canada	2		2			2		2
Unknown	38	63	101	2	254	294	63	357
Total	5,488	2,197	7,685	4,513	598	10,599	2,197	12,796

[1] Of the total carlot equivalents the initial shipments by motortruck represented 9 percent of the movement from the Virginia–North Carolina section, 4 percent of the shipments from the Southeast, and 20 percent of the shipments from the Southwest.

[2] Shelled peanuts from this section were converted to carlots on the basis of 28,000 pounds to the car; unshelled on the basis of 25,000 pounds to the car. Season period: Oct. 28, 1934–Nov. 2, 1934.

[3] Converted to carlots on the basis of 30,000 pounds to the car. Season period: Sept. 23, 1934–Sept. 14, 1935.

[4] Converted to carlots on the basis of 36,000 pounds to the car for rail shipments and 30,000 pounds to the car for motortruck shipments. Season period: Aug. 5, 1934–Aug. 3, 1935.

TABLE 11.—*Shipments of shelled and unshelled peanuts, total rail, boat, and motortruck, expressed in carlot equivalents, from leading producing sections to all destinations* [1] *receiving 20 or more carlots as shown by original billings, season 1934–35*

City of destination	Virginia-North Carolina [2]			Southeastern [3]			Southwestern [4]	Total all sections		
	Shelled	Unshelled	Total	Shelled Spanish	Shelled Runners	Total	Shelled	Shelled	Unshelled	Shelled and unshelled
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Chicago, Ill.	845	56	901	864	418	1,282	6	2,133	56	2,189
New York, N. Y.	666	187	853	272	70	342		1,008	187	1,195
Philadelphia, Pa.	431	150	581	415		415		846	150	996
Boston, Mass.	366	56	422	214	5	219		585	56	641
Cincinnati, Ohio	159	29	188	237	39	276		435	29	464
Cleveland, Ohio	289	23	312	94	14	108		397	23	420
Los Angeles, Calif.	186	58	244	44	6	50	55	291	58	349
Kansas City, Mo.	105	30	135	112	45	157	30	292	30	322
Terre Haute, Ind.	224	7	231	30	46	76		300	7	307
Milwaukee, Wis.	108	77	185	38	16	54	1	163	77	240
Pittsburgh, Pa.	171	29	200	38		38		209	29	238
St. Louis, Mo.	39	35	74	96	54	150	1	190	35	225
Minneapolis, Minn.	74	62	136	36	12	48	4	126	62	188
Detroit, Mich.	98	57	155	21	2	23		121	57	178
Atlanta, Ga.	14	22	36	77	61	138		152	22	174
San Francisco, Calif.	90	22	112	42	1	43	12	145	22	167
Norfolk, Va.	112	18	130	3		3		115	18	133
Newark, N. J.	71	54	125	5		5		76	54	130
Seattle, Wash.	52	25	77	34	9	43	9	104	25	129
Suffolk, Va.	92		92	18		18		110		110
St. Paul, Minn.	36	35	71	33		33	5	74	35	109
Baltimore, Md.	24	77	101					24	77	101
Indianapolis, Ind.	38	14	52	25	18	43		81	14	95
Buffalo, N. Y.	40	46	86	8		8		48	46	94
Lancaster, Pa.	91	2	93					91	2	93
Portland, Oreg.	27	23	50	13	6	19	21	67	23	90
Toledo, Ohio	39	19	58	31		31		70	19	89
Dayton, Ohio	41	6	47	22	18	40		81	6	87
Charlotte, N. C.	26	1	27	51		51		77	1	78
Columbus, Ohio	30	10	40	37		37		67	10	77
Washington, D. C.	57	17	74	3		3		60	17	77
Oakland, Calif.	36	18	54	12		12	9	57	18	75
Denver, Colo.	22	14	36				38	60	14	74
Jacksonville, Fla.	1	46	47	18	1	19		20	46	66
Columbus, Ga.	8		8	57		57		65		65
Louisville, Ky.	19	8	27	34	1	35		54	8	62
Omaha, Nebr.	9	18	27	21	10	31	2	42	18	60
Houston, Tex.	9	34	43	3	8	11	3	23	34	57
Binghamton, N. Y.	47	3	50	5	1	6		53	3	56
St. Joseph, Mo.	17	2	19	23		23	9	49	2	51
Memphis, Tenn.	5	9	14	29	4	33		38	9	47
Des Moines, Iowa	11	15	26	18		18	1	30	15	45
Greenville, Ohio	35		35	6	4	10		45		45
Fort Wayne, Ind.	29	5	34	10		10		39	5	44
New Orleans, La.	7	30	37	5		5	1	13	30	43
Grand Rapids, Mich.	25	9	34	8		8		33	9	42
Lincoln, Nebr.	2	7	9	19	8	27	2	31	7	38
Fort Worth, Tex.	5	13	18	6		6	13	24	13	37
Rochester, N. Y.	19	10	29	6		6		25	10	35
Dallas, Tex.	3	2	5				29	32	2	34
Tacoma, Wash.	19	8	27	6		6		25	8	33
Providence, R. I.	9	18	27	4		4		13	18	31
Richmond, Va.	15	14	29		2	2		17	14	31
Bloomington, Ill.				21	1	22	7	29		29
Davenport, Iowa	3	5	8	20		20	1	24	5	29
Tampa, Fla.		28	28						28	28
Sioux City, Iowa	11	10	21	5		5	1	17	10	27
Lynchburg, Va.	24		24	2		2		26		26
Harrisburg, Pa.	12	12	24					12	12	24
Birmingham, Ala.		4	4	16	3	19		19	4	23
Savannah, Ga.		3	3	20		20		20	3	23
Duluth, Minn.	8	7	15	4	1	5		13	7	20
Green Bay, Wis.		19	19		1	1		1	19	20

[1] Six points not shown in this table are actually among the leading destinations, but are omitted to avoid revealing the volume of purchases of individual firms.

[2] Shelled peanuts were converted to carlots on the basis of 28,000 pounds to the car; unshelled on the basis of 25,000 pounds to the car.

[3] Converted to carlots on the basis of 30,000 pounds to the car.

[4] Converted to carlots on the basis of 36,000 pounds to the car for rail shipments, and 30,000 pounds to the car for motortruck shipments.

Because of the different harvesting dates in the several producing areas, the season did not cover the same period of time in any two sections. For the Virginia-North Carolina section the period used was October 28, 1934 to November 2, 1935; for the Southeastern States the season period was September 14, 1934 to September 14, 1935; and for the Southwestern States the season was taken as August 5, 1934 to August 3, 1935.

During the 1938–39 season, shipments of cleaned and shelled peanuts, reported by over 180 transportation representatives and more than 115 millers, were made from the following points, in descending order of importance within each State.

VIRGINIA-NORTH CAROLINA SECTION

Virginia.—Suffolk, Franklin, Courtland, Petersburg, Boykins, Wakefield, Zuni, Emporia.
North Carolina.—Edenton, Enfield, Tarboro, Elizabethtown, Scotland Neck, Williamston, Ahoskie, Wilmington, Lewiston, Dublin.
Tennessee.—Nashville.

SOUTHEASTERN STATES

Georgia.—Cordele, Dawson, Moultrie, Americus, Albany, Ft. Gaines, Macon, Donalsonville, Bainbridge, Pelham, Blakely, Shellman, Leary, Ashburn, Camilla, Cairo, Arlington, Fitzgerald, Tifton, Colquitt, Savannah, Leesburg, Edison, Coleman, Thomasville, Valdosta, Hawkinsville, Ocilla, Columbus.
Alabama.—Andalusia, Dothan, Enterprise, Ozark, Samson, Eufaula, Headland, Brundidge, Troy, New Brocton, Florala, Peterman.
Florida.—Greenwood, Marianna, High Springs, Malone.
Mississippi.—Jackson.

SOUTHWESTERN STATES

Texas.—Dublin, Stephenville, De Leon, Fort Worth, Abilene, San Antonio, Houston, Denison, Comanche, Carbon, Nixon.
Oklahoma.—Durant, Hugo, Colbert.
California.—Modesto.

In addition millers in many points in the producing area, such as Suffolk and Petersburg, Va., Enterprise and Dothan, Ala., and Columbus, Ga., buy tremendous quantities of farmers' stock peanuts and ship them out in the form of salted peanuts, peanut candy, peanut butter, and refined peanut oil. No statistics are available for publication regarding the total volume of such peanuts, which never appear in the shipment figures of crude peanut oil and until 1940 were not included in full in shipment statistics for raw shelled peanuts, but they probably amount to the equivalent of fully 1,800 to 2,000 carloads of farmers' stock annually.

DISTRIBUTION OF DOMESTIC CRUDE PEANUT OIL

Table 12 shows the original destinations by States, of the shipments of crude peanut oil for the 1934–35 season. This table is based upon weekly shipment records received from freight agents and steamship officials in the South where crushing plants are located. The seasonal

dates used were the same as those taken for the tabulation of the destinations of cleaned and shelled peanuts referred to in table 10. The figures were all reduced from pounds to tank-car equivalents on the basis of 60,000 pounds of peanut oil equaling one tank car. It should be remembered that in addition to the movement of domestic peanut oil, a large volume was imported, for which destinations are not available. Therefore, the figures given here cannot be considered as representing the total consumption of crude peanut oil by the States listed.

TABLE 12.—*Distribution by States, of shipments of domestic crude peanut oil, as shown by original billings, for season 1934–35, expressed in carlot equivalents* [1]

State of destination	Quantity originating in—			
	Virginia–North Carolina section	Southeast	Southwest	Total
	Cars	*Cars*	*Cars*	*Cars*
California		2	12	14
Florida		41		41
Georgia		214		214
Illinois	2	7		9
Kentucky		5		5
Louisiana		63		63
Missouri		1		1
New Jersey	35	50		85
New York		3		3
North Carolina	14	5		19
Ohio	6	75	1	82
Oklahoma			2	2
Pennsylvania	10	12		22
Tennessee		97		97
Texas		3	15	18
Virginia	3	1		4
Total	70	579	30	679

[1] Converted to carlots on the basis of 60,000 pounds per car.

During the 1938–39 season, shipments of crude peanut oil were made from the following points, in descending order of importance within each State.

VIRGINIA-NORTH CAROLINA SECTION

Virginia.—Suffolk.
North Carolina.—Tarboro, Wilmington, Wilson.

SOUTHEASTERN STATES

Alabama.—Troy, Dothan, Ozark, Enterprise, Eufaula, Headland, Montgomery, Andalusia.
Georgia.—Dawson, Americus, Arlington, Camilla, Moultrie, Ashburn, Pelham, Cordele, Valdosta, Albany, Tifton.

SOUTHWESTERN STATES

Texas.—Brownwood, Fort Worth, Stephenville, Dublin.

SUGGESTIONS

Better Quality Peanut Products

The peanut-candy and peanut-butter industries have suffered in the past from the fact that peanuts of too low quality have been used in the products put out by a number of factories. If the raw materials are not of first quality, it is difficult to turn out finished products that are high grade. Leaders in the industry recognize this and many have recommended that all low-quality peanuts be crushed and none of them be used in making peanut butter or peanut candy. This recommendation would seem to be well founded.

Similarly, the development of recognized grade standards for peanut butter, and the inclusion on the labels for peanut-butter containers of the grade of the peanuts used in the product should, by letting buyers know in advance the quality of the peanut butter they are purchasing, tend to increase the sale of peanut butter of good quality.

Need for Seed Selection

The need for careful selection of seed is of vital importance to the peanut industry. The selection of seed from varieties and strains yielding maximum quantities of well-filled, large-podded nuts, adapted to the purpose for which they are to be used, is urged for the Virginia-North Carolina Section. As Spanish and Georgia Runner farmers' stock are not graded by sizes, large-podded nuts of these varieties are less important than with the Virginia type, but peanuts from high-yielding strains should be planted when possible. The possibility of developing strains partially resistent to leaf spot and the leaf hopper should not be neglected.

Careful Picking

Increased care on the part of the operator of the picker in keeping out trash and dirt is desirable. Everyone except the owner of the picker loses when the machine is not carefully operated. In addition to paying for picking nonpeanut material, the grower must assume the cost of the extra bags necessary to sack this material. The cleaner must pay for removing the extra dirt, and may pay peanut prices for it.

Need of Improved Ventilation and Lighting in Many Peanut Factories

Many of the older peanut factories in the South are poorly lighted and poorly ventilated. The installation of suitable ventilation and improved lighting equipment, and painting the interior of the picking rooms with a white paint or enamel, should improve the grades put out, increase the output of the plants, and reduce the expense of lighting. (One or two modern peanut mills have recently installed fluorescent daylight tube lights [fig. 44] over their picking tables, and find that this lighting makes it much easier to detect moldy or otherwise undesirable kernels.)

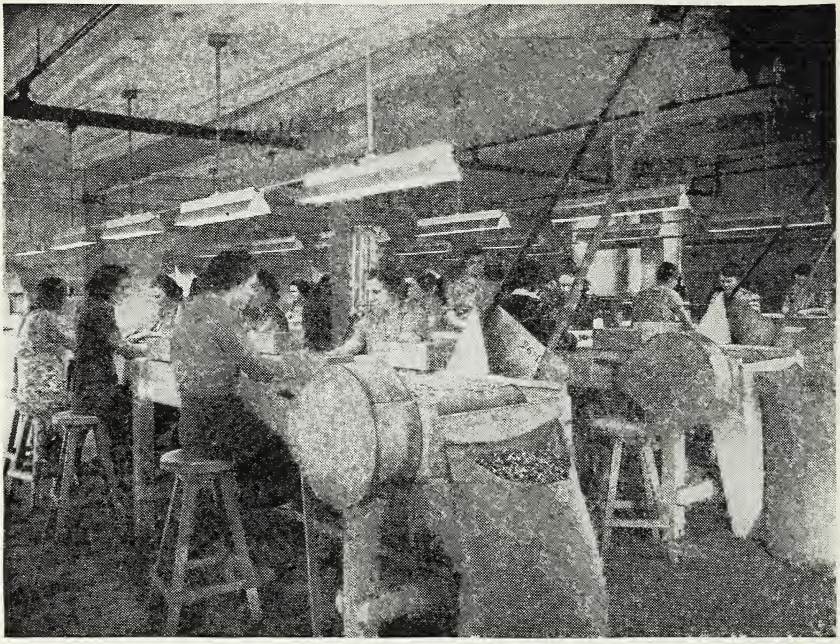

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FIGURE 44.—Picking-table room in modern peanut plant in which fluorescent tube lights are used over picking tables to make easier the detection of moldy or otherwise undesirable kernels.

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